Volume 85
Number 21

IRON TRADE REVIEW

Cleveland, O.
Nov. 21, 1929

Atkins to Wilson to Bent

Intelligent Teamwork Is Better Than Rigid Adherence to Fixed Rules—Understanding of Requirements Is Sometimes Better Than Stereotyped Specifications

By Franklin B. Evans

"IT DOESN'T take you long to get around when there's an order in sight, does it?" Wilson, purchasing agent of National Steel, smiled a friendly greeting to Bent.

"No, Mr. Wilson, any time there's a couple of thousand tons of plates in the air, we usually get there. I suppose you'll want this plate last week" —it was Bent's turn to chaff a little. "Well, we can get it to you a little more quickly than anybody else I know."

Wilson got down to business. "Here's the order, here are the sizes, tensile strength and so on; to A.S.M.E. specifications."

Bent studied the order blank thoughtfully. "You want this steel to A.S.M.E. specifications, Mr. Wilson?" Wilson nodded assent.

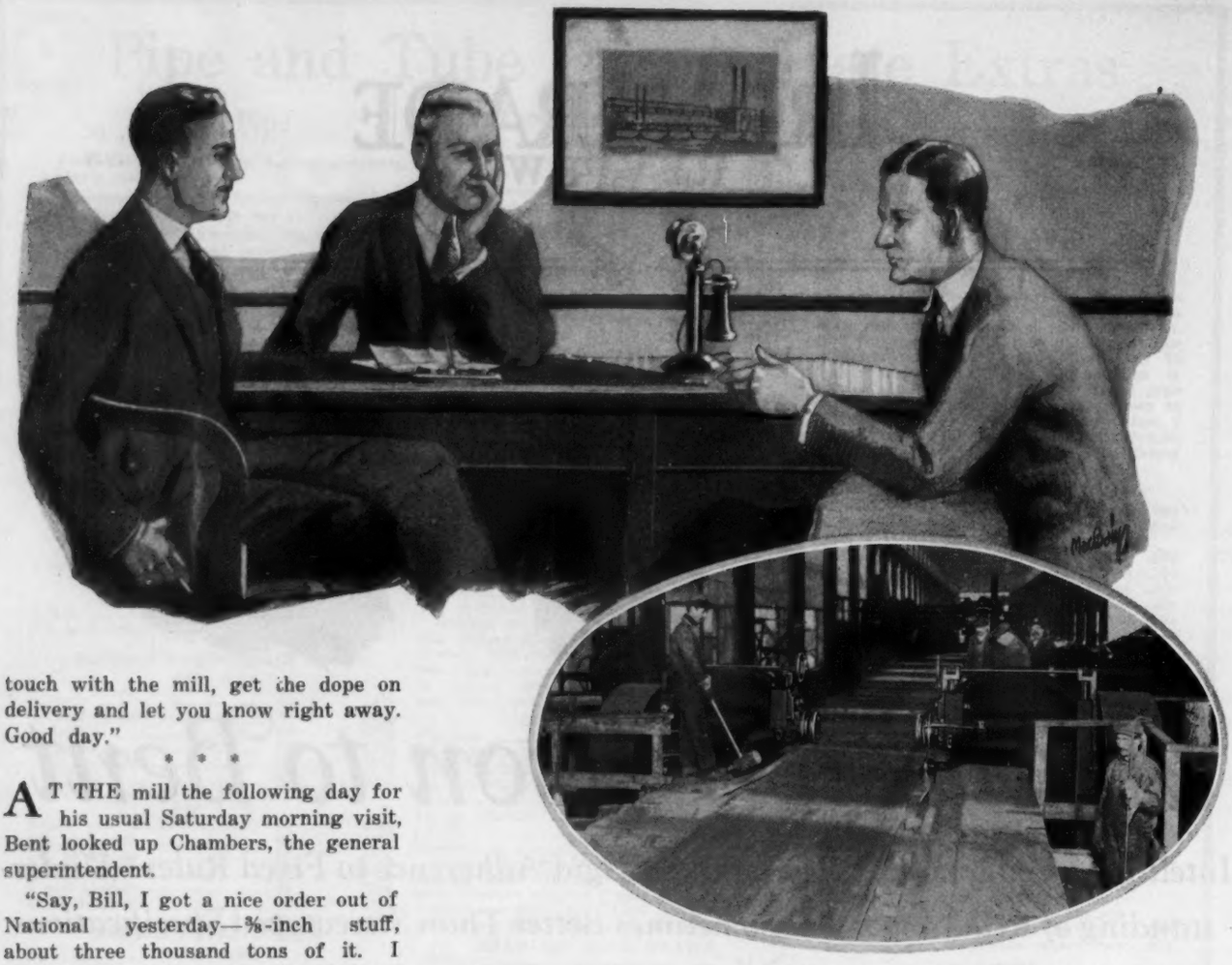
"What are you going to use it for?"

"I don't know. What has that got to do with it? You've got all the information you need there; the composition, physical specifications, chemical specifications. What else do you want, an autographed photograph of the customer we're going to use it for? With the market what it is, I should think you'd be glad enough to get an order without trying to cross-examine the buyer. You meet the specifications. If the steel is all right we'll take care of it when we get it. Our shop people know what they want, and we've got a laboratory ourselves, you know. All you've got to do is to give it to us to the specifications, we'll take care of the rest. But get in touch with your mill and let me know if you can beat that delivery a little."

Bent opened his mouth as if to say something and then shut it again. An order in hand is worth two in prospect. Why annoy the customer who gives you an order? A. S. M. E. specifications? That ought to be easy enough.

"All right, Mr. Wilson. Much obliged for the order, I'll get in

THIS is an article written in story form that salesmen, purchasing agents and production men will enjoy, and profit by reading. It dramatizes an everyday incident; its characters actually live, though their names and those of the steel companies are, of course, fictitious. Bent is a salesman, Wilson a purchasing agent and Atkins a production manager. Bent obtains an order for a tonnage of plates, seeks to understand how and for what purpose they are to be used. The purchasing agent simply insists on the specifications. This leads to complications, which eventually are happily adjusted. It is a strong appeal for teamwork.



The purchasing agent learns that it makes a difference how the plates are trimmed, even when the specifications are the same

touch with the mill, get the dope on delivery and let you know right away. Good day."

* * *

AT THE mill the following day for his usual Saturday morning visit, Bent looked up Chambers, the general superintendent.

"Say, Bill, I got a nice order out of National yesterday—⅜-inch stuff, about three thousand tons of it. I want to talk to you about beating the delivery promise a little if we can."

"What are they going to use it for?" asked Chambers.

"I don't know," admitted Bent.

"Don't know? The boss says we've got to know. Why didn't you ask him?"

"I did. He as much as told me it was none of my business. Said 'There's the composition and the physical specifications, that's all you need to know.' He was quite sarcastic. Asked me if I needed an autographed picture of their customer. Say, National doesn't order much of their stuff to A.S.M.E. specifications, do they?"

"No," replied Chambers. "They're strong on that research specification stuff out there; give us their own specifications. They usually want the coupons cut from the top of the plate. On A.S.M.E. specifications we take the coupons from the bottom of the plate."

"Does it really make much difference, Bill, whether you cut the coupons from the top or the bottom? It's kind of hard to explain to a customer, you know."

"Of course, it makes a difference. We can make that order of National's to A.S.M.E. specifications and it will pass any boiler inspection in the country. But it wouldn't be worth a darn to United, for example, who weld all their plates. You know there's always a variation of 5 or 7 to 8 points in the carbon between the top and the bottom of any plate. You can't get away from that. We know what United needs and we give it to them. If they took A.S.M.E. steel and tried to weld it the way they do, they would run into hard spots at the top and couldn't weld it. We take care of that by cropping the plates more and taking the coupons from the top instead of the bottom. You'd better find out what National wants to use that steel for. If they are going to weld it the way United does, they'll run into trouble. Why don't you go upstairs and talk it over with Charley Williams? He'll straighten the matter out for you."

"I'll do that, Bill. Much obliged." And Bent started for the office of Williams, the metallurgical engineer whose business it was to visé all incoming orders and endeavor to obtain as much information as he could concerning the use to which material was to be put by the customer.

* * *

WHAT, looking for another order already? Ship us some of those three thousand tons first; we can use it," was Wilson's greeting to Bent when the latter appeared the following Monday morning.

"No, Mr. Wilson, I didn't expect to get another order this morning; but, of course, I wouldn't refuse one. I really came to get a little more information about the last order. If you'll give me a few minutes I'd like to explain something.

"In the first place, I understand your viewpoint, that it is none of our business what you use the plates for. All we have to do is to furnish it to certain specifications and your people will do the rest. But, really, Mr. Wilson, there's a great deal more to it than that. That steel will meet any boiler inspection in the country; it will be right up to your specifications, but we really ought to know what you are going to use it for, and I'll tell you why.

"Plates are no longer just plates,"

Bent leaned forward earnestly. "The constant improvements in tank making, fabricating and structural work, particularly the big strides in welding, have brought new problems to the plate manufacturer. Why, Mr. Wilson, we are making steel for five different kinds of welding. It's all good steel, too, but the steel that works well with one customer might fall down with somebody who welds differently. For hammer welding, for example, the carbon must be very low, not over 0.20. On electric arc welding, you can go up to 0.40 carbon. Resistance welding is nearly all low carbon stuff, and so on. We do a lot of little things that cost us money and for which we don't ask any extras, but we do them to save ourselves and our customers grief. We've replaced more than one order, not because the steel wasn't up to specifications, but because the customer hadn't given us enough information about what he wanted to use it for. When a man has trouble it is hard to convince him that there is nothing wrong with the steel, that the trouble is in the method of welding or working. That isn't fair, of course, but several times we have had to take our medicine, just to keep a customer a friend.

Surface Condition a Factor

"There are so many things that enter into this question. For example, there's the matter of gage. Plates are sold two ways, to gage or to pound per square foot. Theoretically, a ¼-inch plate weighs 10.20 pounds per square foot. Now if a customer orders plate solely by weight, you take it for granted that thickness is not such a factor. There are always little variations. A ¼-inch plate may be a little thicker in the middle. But if the customer is selling tanks on a close basis, the little variations make a difference to him. If we know what he wants it for, we can see to the uniform thickness of the plate.

"Flatness is another point. There are no standard tolerances, as you know. For some purposes the plate must be very flat. For other purposes it does not make any difference. It is also important, from the standpoint of shearing accuracy, to know how the plates are to be used. Suppose somebody is going to make a welded tank and is going to weld the plates together edge to edge, then special attention must be given to accurate shearing and very often special reshearing is required. Consequently we ought to know whether they are going to weld them together.

"In some cases surface is not of the greatest importance, and many times it is. You know, you will always get a little surface imperfection in all steel. If a man is going to make a tank to hold hot water these little imperfections don't make a great deal of difference. But if he is going to use the plates for welding cracking stills, where hot oil will get into the imperfections and because of the sulphur content corrode the steel very rapidly, that is something else again, and we take extra care to see that he gets plates free from surface imperfections.

Various Problems Arise

"On light plates we ought to know if the man is going to enamel them. Locomotive tender tank plates offer still another problem. Think of the bending those plates get, the vibration in service. Every seam is a potential source of leak.

"I had a customer not so long ago who was trying to save some money and ordered plates cut very close to size. They were heavy plates, 1¼-inch thick, and you know the shearing droop you'll get on a heavy plate. When he tried to weld them they wouldn't hold, although there was nothing wrong with the steel, as he admitted. Had we known how he was going to weld them we would have told him the plates should have been gas cut or machined to get away from the crushing effect of the knife.

"Gas cutting brings up another point. If the customer is going to weld gas cut plates, plates should be planed back from the gas cut because gas cutting decarbonizes steel slightly. We are equipped to plane such plates at very reasonable charges.

"You don't realize what this welding means to us. We have had a customer for years, always got most of his business, gave him good steel, and still we had trouble now and then. Finally we talked it over with him and he let us send a man to the shop. We got into his welding practice, saw what he was doing and then we knew just what to provide for in the way of carbon ranges. Today he is one of our best customers and we haven't had the slightest trouble for a long while.

"Even a little thing like loading is important. If we know a man has only a 5-ton crane, instead of a 10-ton crane, we load the plates with blocks between them so that he can lift them easily and quickly with a 5-ton crane.

"It really is very important that we know how a man is going to work the steel. If we know that he is going to cold flange it, for example, or hot flange it, or punch it, or drill it—if we have an intelligent understanding of these things we can take those little steps, often without extra cost to the customer, which will insure his getting steel which he can work without the slightest trouble. It will be more satisfactory to him and to everybody concerned.

"In a nutshell, that's the story. When a man gives us an order for plate we ought to know several things. The sizes, of course. We ought to know whether he is going to weld it, and how he is going to weld it. Whether he is going to rivet it or form it. What loads he is going to put on it, what strength the steel has got to have. A man can order to chemical specifications, or he can order to physical specifications and tell us what he is going to do with the steel and leave the chemical specifications to us.

Of course, every man knows his own fabricating business better than we do. But on the other hand, we know steel. We've have been making steel plates ever since steel came into practical use about 50 years ago and iron plates for many years before that. Its our business and we naturally think we've learned a lot of the little kinks in connection with the use of steel.

Customers' Interests Foremost

"Why, we have a crackerjack metallurgical engineer, Mr. Williams, who does nothing but visé all orders before they go to the mill. He sends back dozens of orders for more information. Then we have to go out and see the customer. Sometimes the customer doesn't understand, and he thinks we are trying to run his business or save ourselves money. Actually, as a result of these calls we do a lot of little things that cost money, and for which we don't ask any extras, just to insure the customer's complete satisfaction with the steel.

"Perhaps I'm boring you, Mr. Wilson. I didn't mean to take up so much of your time, but this thing is so important to both of us that—."

"That's all right, Bent, you are not boring me, I'm listening. It's all very interesting."

"Well, let's get down to your case. Our people would like to know what you are going to use this steel for. You usually specify that the coupons be taken from the top of the plate. A. S. M. E. specifications call for the coupon from the bottom of the plate. You know, there's a variation of from 5 or 7 to 8 points in carbon between the top and bottom of any plate. If we know that you

are going to weld these plates, and how you are going to weld them, we can be guided accordingly in the cropping and see that you get plates whose carbon is suited for the fabrication or welding you are going to do with this steel."

Wilson reached for his telephone. "Mr. Atkins, please. . . . Atkins? . . . Wilson, Jim. Can you come up to the office for a minute or two? I'd like to see you about the three thousand tons of steel we placed last Friday."

"Thank you, Mr. Wilson," nodded Bent, "I'm sure you realize that I don't want to bother you unnecessarily, but it is to everybody's best interests to prevent difficulties."

Solving the Problem

"Mr. Atkins," to the production manager who had just entered the room, "you know Mr. Bent." Atkins nodded, "How do you do, Mr. Bent."

"Jim, what are we going to use that steel for—what are we going to make out of it?"

"Oh, we're going to make some chemical vessels, not high pressure stuff. Why?"

"Well, Mr. Bent has brought up several little things and I wanted to go into them with you." Wilson reviewed Bent's remarks concerning the carbon variations in plate, the A. S. M. E. specifications, coupons and other points. "Do you think we are safe in ordering that steel to A. S. M. E. specifications, or do you think we ought to stick to our own specifications, with coupons cut from the top? You are the fellow that will have to stand for the grief if we run into trouble."

No Difficulty Expected

"I don't think we'll have any trouble if the steel is all right, if it meets the specifications," replied Atkins. "This isn't high pressure stuff. We took it on a pretty close price."

"Are you going to weld that plate or rivet it, Mr. Atkins?" asked Bent.

"We'll weld it."

"Then the question of the carbon is very important," replied Bent. "The steel will be right up to specifications; don't worry about that, but we will have to look out for these little carbon variations which are present in every plate. May I offer a suggestion? Suppose I have the mill cut and ship you a few plates to A. S. M. E specifications, by truck, so that we don't lose any time. Run those through your shop, just as you will on the main order. Then let's see if you are going to have any trouble on them."

"That might not be a bad idea," agreed Atkins. "We took that order awfully close," to Wilson "and I don't want to run into any grief now that would add up our cost on the thing." Turning to Bent, "can you get those plates over tomorrow or Wednesday?"

"Yes, I'm sure we can. I'll phone the mill right away. They are all anxious down at the mill to do everything they can and will co-operate to the limit."

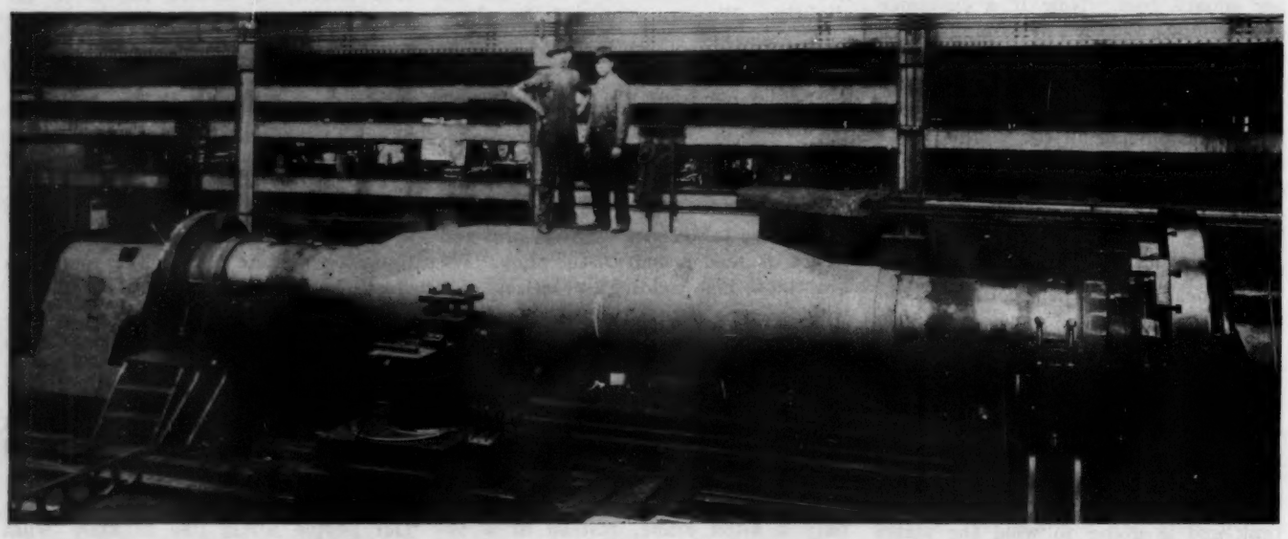
"All right," Atkins nodded in agreement. "Leave it that way. Send me some A. S. M. E. plates and I'll try them out right away."

* * *

HELLO? That you, Mr. Bent? Yes. Wilson, National Products. I'm all right, thank you, how are you? Say, on those three thousand tons of plates. You'd better tell the mill to change that order to our usual specifications, coupons from the top. I'll write you a letter on it today. Oh that's all right. I'm glad you brought the thing up. Perhaps you saved us from getting into a jam. Now get behind that order and get it to us as soon as you can. Maybe I'll have another order for you soon, we're figuring on a certain big job right now. So long."

And Wilson hung up his telephone receiver.

Generator Shaft Weighs 140,000 Pounds



WEIGHING approximately 140,000 pounds, one of the largest shafts ever built was machined recently in the shops of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. This shaft has a maximum finished diameter of 53 inches, with an overall length of 32 feet. It was forged by the Midvale Co., Philadelphia, from an octagonal ingot approximately 82 inches in diameter and weighing in the neighborhood of 290,000 pounds.

The shaft will be supported with the rotor on two large bearings, 30 inches in diameter by 60 inches long. It is designed for use in the rotating part of a 60,000 kilovolt-ampere horizontal generator, the speed of which will be 514 revolutions per minute. This large unit will be installed in the electrical test laboratory which is maintained by the Westinghouse Electric & Mfg. Co.

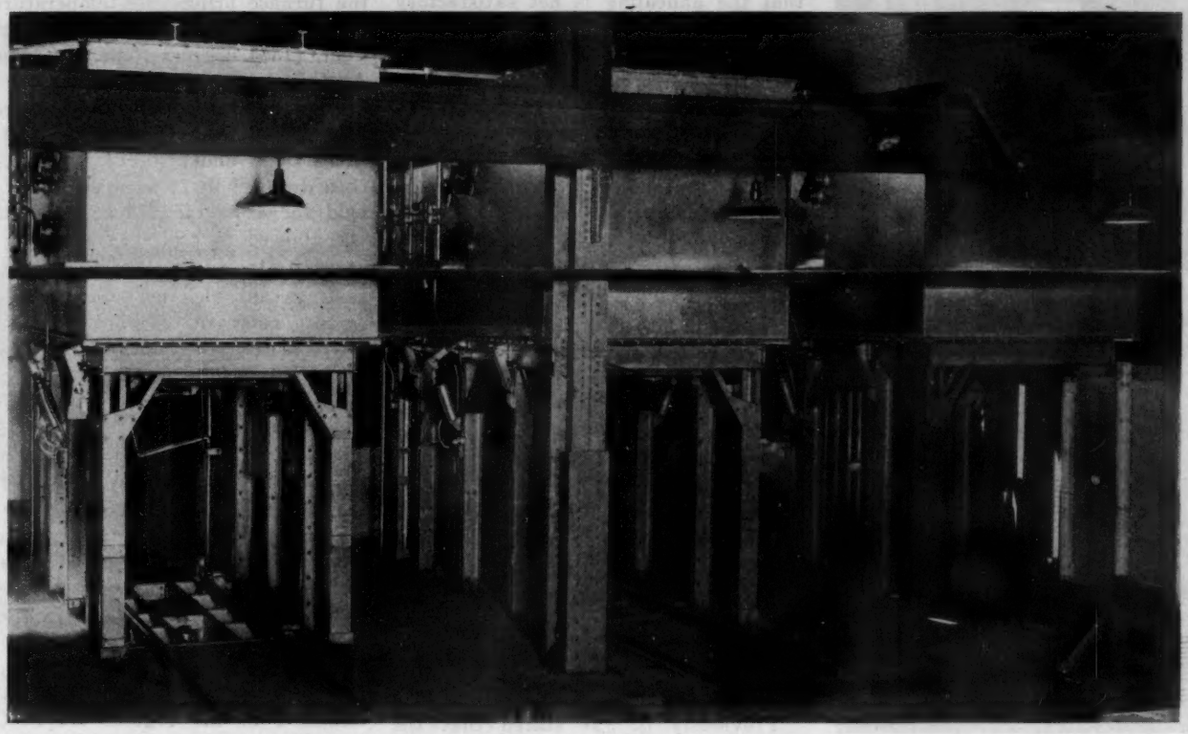


Fig. 1—Three electric annealing furnaces of the overhead type are used in the short annealing cycle

Develops Short-Cycle Method for Annealing Malleable Iron

FOR a number of years considerable effort has been devoted by producers of malleable cast iron and other investigators to develop a method which would decrease, to a large extent, the time necessary to anneal or heat treat white cast iron of the proper composition and convert it into the commercial product known as malleable cast iron. The mechanism involved in converting the white or hard iron into the blackheart or malleable cast iron includes the absorption of free cementite into the solid solution of iron and carbon, and the precipitation of the absorbed carbon from the solid solution as a form of graphite called temper carbon.

Some time ago the General Electric Co., Schenectady, N. Y., began an investigation to learn something of the mechanism of carbon precipitation with a view of a possible shortening of the process. Their efforts were successful and resulted in the development of a short-cycle annealing process whereby the time required is between 28 and 30 hours. Investigation showed that the absorption of free cementite into solid solution was a question of temperature and time.

At 1100 degrees Cent. (2012 degrees Fahr.) it was found that solution was effected in approximately 15 minutes while at 900 degrees Cent. (1652 degrees Fahr.) it took about 30 hours. With only a drop of 50 degrees from the highest temperature or at 1050 degrees Cent. (1922 degrees Fahr.) it took 8 times as long to effect solution or two hours. At 1000 degrees (1832 degrees Fahr.) the time required was 12 times that at 1100 degrees or 3 hours. However, the higher temperatures are too close to the softening point of the iron to result in much commercial value while temperatures below 900 degrees Cent. (1652 degrees Fahr.) are too low for rapid absorption of cementite.

After data was obtained on the absorption phenomena, it was necessary to study precipitation of the carbon. As in the case of absorption, precipitation also is related to time and temperature, and it was found that at 900 degrees Cent. (1652 degrees Fahr.) practically no precipitation had occurred at the end of 100 hours. Lowering the temperature increased the precipitation rate which reached a maximum between 750 and 700 degrees Cent. (1382 and 1292 degrees Fahr.) Below 700 degrees precipitation of carbon is retarded and at 650 degrees Cent. (1202 degrees Fahr.) no precipitation is evident.

With data at hand on the minimum time required for solid solution and the maximum rate of carbon precipitation, experimental 130-kilowatt electric annealing furnaces with a capacity of 2000 pounds of castings were built by the General Electric Co. to try out the method on a commercial scale. These furnaces were operated until recently when a new installation of three 325-kilowatt electric furnaces with a capacity of 6 tons was put into operation at its Erie, Pa., plant. The heating elements of the furnaces are nickel-chromium and are arranged to be connected in 3-phase or single phase to give a power

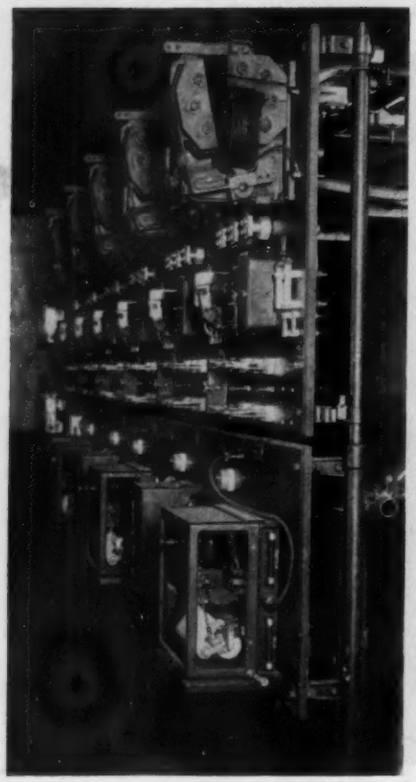


Fig. 2—Control panel for the furnace installation

range of 52,170 or 325 kilowatts. The weekly capacity of the furnaces is 100 tons, and the average annealing cycle is 28 hours.

The furnaces which are shown in Fig. 1 are overhead type into which the car containing the castings, shown in Fig. 3, is elevated. Essentially, the process consists in rapidly heating the castings to the maximum temperature which is 1000 degrees Cent. (1832 degrees Fahr.) and holding at this temperature for 4 hours. The temperature of the castings then is reduced to 740 degrees Cent. (1364 degrees Fahr.) in 4 hours. The castings are held at 740 degrees in another furnace for 4 hours and then the temperature is dropped to 730 degrees Cent. (1346 degrees Fahr.) and held at this temperature for 4 hours. At the end of this period the temperature is lowered to 720 degrees Cent. (1318 degrees Fahr.) and the castings held at this temperature for another 4 hours. The castings then are removed and allowed to cool in the air or in a cooling furnace.

Test bars are included with each heat and these are removed at various times and examined to follow the heat treatment. These bars are arranged in step form with the largest section 2 inches square and decreasing in 3 steps to 1½, 1 and ½-inch square. On completion of the annealing cycle at 730 degrees Cent. stage some of the castings are fractured and examined. If the examination shows that the annealing is not satisfactory due to faulty composition of metal or other reasons, the temperature is raised to about 800 degrees Cent.; the castings allowed to soak for a short period and then the temperature is dropped to 740 degrees, etc. This secondary treatment will require about 15 hours more, making the complete cycle 43 hours.

May Vary Furnace Order

While the furnaces are placed parallel as shown in Fig. 1, and it would appear as though the end furnace would be the high temperature furnace, the second the cooling furnace, etc., this does not necessarily hold. Reasons for this are twofold. First, due to the ease of control and rapid heating up of the furnaces, any one of the three installed may be used as the high temperature furnace, and second, the variation in time of heating up and holding temperature time intervals may change the position of the high and low temperature furnaces.

Previously it was stated that the castings were held at the high temperature (1100 degrees Cent.) for 4 hours. Actual time in the high temperature furnace is about 11 hours. Seven hours of this interval are required to bring the castings to the required temperature and the remaining 4 hours devoted to insuring all castings reaching a uniform temperature and allowing sufficient time for absorption of the free cementite as mentioned earlier. At the end of the 4-hour holding period in the high temperature furnace, the car containing the castings is lowered to the floor and shifted to the cooling furnace.

Air cooling during the shifting of the car and the lower temperature in the furnace brings the temperature of the castings down to 740 degrees Cent. (1364 degrees Fahr.) in 4 hours. At this temperature the drawing operation begins. That temperature is held for 4 hours, dropped to 730 degrees Cent. and held for 4 hours, and then dropped to 720 degrees Cent. and held for 4 hours. Then the castings are allowed to cool in air.

Physical properties obtained on castings annealed by this method are said to compare favorably with these obtained by the ordinary annealing process. Results given show a tensile strength of 56,000 pounds per square inch; a yield point of 34,300 pounds per square inch, and an elongation of 15 per cent in 2 inches.

Other features are claimed for the process. The castings are said to be machined better than those obtained in the ordinary anneal. Also the castings show no signs of framing or reversion. There is claimed to be little skin on the castings and that they clean somewhat easier than those annealed in the regular way. Castings can be quenched directly from the 720 degrees Cent. (1328 degrees Fahr.) draw with increased strength without brittleness. It is stated that the castings may be galvanized without embrittlement and that they need no previous heat treatment or ageing. Also, warping of castings is less than that encountered in other annealing processes. Advantages claimed for the method are that it does not require boxes and packing material; hard cleaning (if desirable); less labor; less inventory; short delivery; cleaner operation; annealing not over two days behind the melting furnace; less space; composition (hard iron) control, and lower cost.

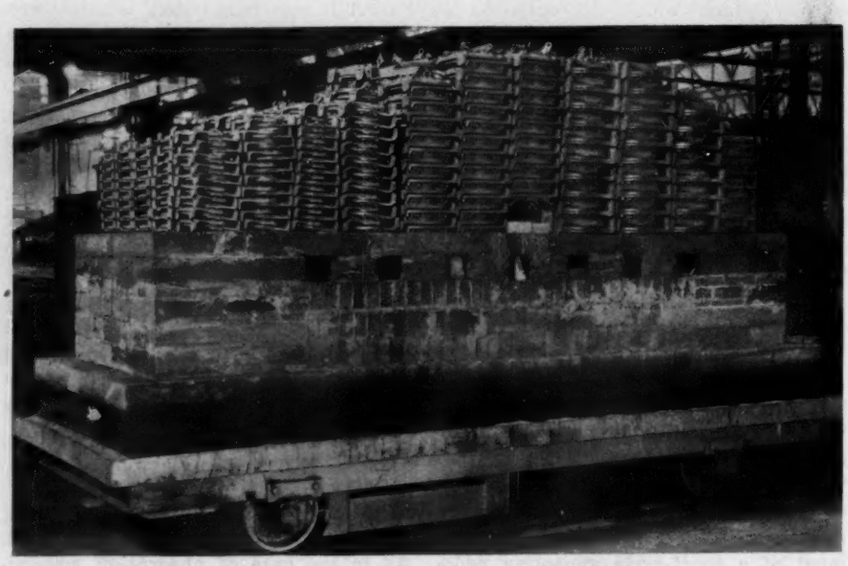


Fig. 3—Castings are packed on a car with a refractory top and elevated into the furnaces. Boxes may be used if desired

Left to right—Charles N. Fitts, president, American Institute of Steel Construction; Henry Goldmark, consulting engineer, New York; Dorothy Dix, who welcomed the convention to the Gulf Coast; William E. Humphrey, chairman, federal trade commission; Dr. D. B. Steinman, consulting engineer, New York

Steel Fabricators Optimistic as Institute's Work Progresses

OPTIMISM supported not only by the sound condition of the structural industry but also by important accomplishments in engineering, merchandising and trade practice was a dominant characteristic of the seventh annual convention of the American Institute of Steel Construction, held at the Edgewater Gulf hotel, Biloxi, Miss., Nov. 12 to 15.

"In the main conditions in the structural steel industry have been prosperous," declared Charles N. Fitts, New England Structural Co., Boston, in his presidential speech Wednesday. "When compared with related businesses we have cause for much satisfaction. Construction in the United States has shown a decline of 10 per cent from that of 1928. On the other hand the statistics of structural steel shipments have continued to grow and our business has shown a notable increase over the record of last year."

President Fitts touched on the many accomplishments of the institute and in outlining work for the future, made the following recommendations:

1. That preparations be made for a semi-centennial celebration in 1934 of the invention of the skyscraper.

2. That the federal government be petitioned to create in the United States bureau of standards a division to diagnose demolished buildings.

3. That an expert investigation be made of the effect of the tall building on taxation, health, and society.

4. That the bureau of the census be requested to enlarge its current statistics so that trading areas be measured and established for basic commodities such as structural steel.

The favorable position of fabricated steel also was emphasized in the report of the executive director of the institute, Charles F. Abbott, who presented the following government figures on the consumption of fabricated structural steel:

Year	Tons
1921	1,188,600
1922	2,334,720
1923	2,433,600
1924	2,660,160
1925	2,998,080
1926	3,214,800
1927	2,853,750
1928	3,072,300
1929*	3,955,880

*Last four months approximated.

"The quota of 5,000,000 tons previously set by the institute is steadily being approached and we have good reason to believe it will be realized," declared the speaker. "The industry was never in better condition than it is at present. Personal relations have become improved, co-operation has supplanted individualism, business methods have been advanced along constructive lines, the public has become conscious of structural steel and acquainted with the industry, better relations have been established between buyer and seller and as this report will indicate the industry is now confronted with a future that offers vastly more in the way of encouragement than at any time in the past."

Mr. Abbott outlined in detail the work accomplished during the past year by the institute's staff of 50. He emphasized particularly the effectiveness of the educational campaign among architects, contractors and engineering students, as well as to the public at large. Speaking of tangible results, Mr. Abbott stated that actual sales involving 320,000 tons of rolled steel have been traced directly to the work of the institute's district engineers. In conclusion, he

declared that the institute should engage in a "more extended activity—additional field engineers, more enlarged advertising and other extensions are advisable in order that the present momentum may be fully sustained. It should not be handicapped when its record entitles it to enlarged support. It should grow with the demands being made upon it for service. It should not be forced into a position incapable to meet a natural growth."

George E. J. Pistor, Hay Foundry & Iron Works, New York, treasurer of the institute, presented his annual report, indicating the favorable financial condition of the organization.

In his annual report as chief engineer, Lee H. Miller, Cleveland, touched on the technical accomplishments of the past year, including the publishing of institute's handbook, the issuing of technical service bulletins, the development of steel floors as an important new market for steel, and the opportunities for the use of steel in dams.

In connection with the last-named subject Mr. Miller reported that the practicability of the Boulder canyon dam is under consideration. Dams built of structural steel have successfully demonstrated their usefulness for the past 30 years, he declared. "We have been in touch with United States bureau of reclamation regarding the use of steel for this dam," Mr. Miller said. "It is, however, apparent from correspondence and conversation that, regardless of whether a steel designed dam can be submitted that is safer and more economical, it will not be considered for this structure; and if the conditions fixed for the design of structure steel are observed on other materials, there will be engineering problems involved that will be difficult to meet."

FORE!
Executive Director Charles F. Abbott takes a healthy swing at the ball

F. H. Frankland, director of engineering service, reported on the favorable results of the institute's program of co-operation with engineers and architects. He exhibited numerous letters to show the gratifying reception accorded the technical and semi-technical literature issued from his office.

One of the most interesting features of the session was the presentation by President Fitts on behalf of the institute of the award to the Sixth street bridge at Pittsburgh "as the most beautiful bridge built in 1928." As reported in last week's issue, this bridge was selected by a committee of two engineers, two architects and a layman. The award was received on behalf of Allegheny county by V. R. Covell, chief engineer, bureau of bridges and A. D. Nutter, engineer of bridge design. In a brief address of acceptance, Mr. Covell stated that the unveiling of the bronze tablet, which was exhibited at the meeting, will take place during the first week of December.

Among the committee reports presented by title at the morning session were the following: Committee on Code of Standard Practice, C. M. Denise, McClintic-Marshall Co., Pittsburgh, chairman; committee for purpose of studying fireproofing, E. W. Krueger, Worden-Allen Co., Milwaukee, chairman; committee on uniform method of cost accounting, W. S. Mosher, Mosher Steel & Machinery Co., Dallas, Texas, chairman; publicity and advertising committee, G. E. J. Pistor, chairman; committee on standard handbook, D. H. Wood, Converse Bridge & Steel Co., Chattanooga, Tenn., chairman; and committee on artistic bridge design, presented by F. H. Frankland in the absence of Clyde MacCornack, Phoenix Bridge Co., Phoenixville, Pa., chairman.

Discuss Use of Steel in Building Bridges and Dams

"I want to review for you the story of bridges, not as a dry recital of span lengths or structural principles or erection details, but rather as a heart-stirring narrative of high adventure and deep dramatic interest. I want to give you a glimpse into the drama, the romance, the poetry of bridge building. ..... I want to make you see bridges as I see them—not as mere prosaic objects of utility and economy, but as something far more significant and inspiring. ..... A bridge is the symbol of humanity's heroic struggle toward mastery of the forces of Nature. A bridge is a monument to Mankind's indomitable will to achieve."

WITH this inspiring introduction, D. B. Steinman, consulting engineer, New York, speaking at the Wednesday afternoon session, launched his address "Fifty Years of Progress in Bridge Building."

In turn he told the dramatic stories of the Brooklyn bridge of the Roeblings, the Eads bridge at St. Louis built by Capt. James B. Eads, Lindenthal's Hell Gate arch bridge, the famous cantilever bridge spanning the Firth of Forth, the Quebec bridge in the building of which occurred two disasters, the Carquinez Strait structure in California and the Florianapolis span in South America.

Design Is Improved

Each of these bridges embodied something new in bridge design, materials or method of construction. Referring to materials, Mr. Steinman said:

"In the construction of the Eads bridge at St. Louis, completed 1874, was the first use of steel in bridge construction. This valuable metal soon superseded the timber and cast iron used in earlier structures. Steel offered new and enlarged possibilities and opportunities. The quest for an even stronger metal soon led to the development and application of alloy steels. Nickel steel was used in the Manhattan, Queensboro, Quebec, Metropolis and Philadelphia bridges. A more economical alloy was found in silicon steel, and this was used in the Philadelphia and Carquinez bridges.

Finally heat-treated steel was developed for bridge work, the increase in strength being produced by a special process of heat-treatment of the steel, without the addition of other metals. The highest form of this high-tension heat-treated steel, permitting a working stress three times as high as that allowed on ordinary structural steel, was used in the Florianapolis suspension bridge in Brazil, completed in 1926. This development of higher strength steels has extended the range of economic construction of long-span bridges."

In regard to methods of erection, the speaker stressed the improvements in efficiency, safety and speed. He said:

"The Brooklyn bridge took more than ten years to build; a modern bridge of equal or greater magnitude is built in four years or less. The reduced time required for spinning large suspension bridge cables (as a result of the improvements developed by H. D. Robinson) illustrates the improvement in the art. The Brooklyn bridge cables (only 900 tons of wire per cable) took 21 months; the Williamsburg bridge cables (1100 tons of wire per cable) took seven months; the Manhattan bridge cables (1600 tons of wire per cable) took four months; and the Philadelphia bridge cables (3300 tons of wire per cable) took only five months."

The size of bridges is increasing steadily. Mr. Steinman declared that when Lindenthal proposed to build a span of 3240 feet across the Hudson river, many said it could not be done. But there is now actually under construction at New York a monumental structure to bridge the Hudson river with the record-breaking span-length of 3500 feet. And plans have been prepared for a still bolder project—the proposed Narrows bridge, to cross the entrance to New York Harbor with a span-length of 4500 feet.

Mr. Steinman gave the following facts regarding this proposed structure:

"The Liberty bridge is the name given to the proposed structure to span the Narrows at the entrance to New York harbor. It is the essential link in a highway system to connect Brooklyn with Staten Island, Long Island with New Jersey, New England with the West and South—all in the shortest, most direct line, without passing through Manhattan island. Only in such manner can the pressing congestion of traffic in Manhattan be relieved.

With one main pier on the Island of Fort Lafayette and the other back of the pierhead line near Fort Wadsworth, the clear span of this monumental structure will be 4500 feet. In order to clear the highest masts of ocean liners, the span will have a clear height of 235 feet above high water. The towers, as designed, will be 800 feet high—exceeding the height of the Woolworth building. The main cables of the suspension structure will be 48 inches in diameter, each containing 48,000 wires. The strength of each wire will be 240,000 pounds per square inch."

Withstand Hydrostatic Pressure

"Steel Dams, Lock Gates, Caissons, etc." was the subject of an address by Henry Goldmark, consulting engineer, New York, who dealt with steel structures required in connection with reservoirs, canals and harbors.

All the structures described consist of steel plates and shapes, which must be designed to withstand hydrostatic pressure when in service. The most important of them are steel dams for reservoirs and the lock-gates and caissons in canals and harbor works. The gates in canal locks are almost without exception of the "Mitering" type, in which each gate consists of two leaves revolving on vertical pivots. In drydocks, floating caissons are almost always used. He described these types and illustrated them by reference to some of the most important works built during the past two decades.

The general structural arrangement of the dams and gates and their most important details were shown and some account given of the methods of erection and the theory of the stresses in the steel.

Reference was also made to the best way of protecting the metal against corrosion especially in sea water and in certain lakes where decaying vegetation affects the character of the water.

The durability of structures of the types described as evidenced by the long service rendered by many of them in Europe and the United States was emphasized.

An exhaustive study of the design of steel column slabs was presented in a paper by Kenneth G. Merriam, assistant professor of applied mechanics, Worcester Polytechnic institute, Worcester, Mass. Professor Merriam described an investigation performed at the institute at the suggestion of the Eastern Bridge & Structural Co. of Worcester to evolve a design method which would be based on experimental evidence ob-

Engineers and Fabricators Examine Battledeck Steel Floor

In right foreground G. E. J. Pistor, treasurer of the institute, is holding his hand to protect his eyes from the bright arc; behind him is W. M. Wood, past president. At Mr. Pistor's right is President Charles N. Fitts, watching the welding through a blue-glass shield

Structural Trade Practice Code

DEFINITION

The structural steel industry includes any person, firm, or corporation hereinafter designated the "distributor" engaged in manufacturing, selling, distributing or erecting structural steel for construction purposes.

A "distributor" is either a Mill, a Warehouse, a Fabricator or an Erector.

For the purpose of these proceedings a Mill is a manufacturer of structural materials for construction purposes who sells to the warehouse or fabricator.

A Warehouse is a concern that carries a well selected stock of plain materials, buys in suitable quantities and re-sells to Fabricators, Erectors and others and assumes the credit risks and such other obligations as are common to such sales.

A Fabricator is a concern that maintains a shop for the fabrication of plain materials for construction purposes according to plans and specifications and assumes the credit risk and such other obligations as are common to such sales.

An Erector is a concern that generally contracts with buyers to furnish and erect structural steel fabricated by himself or others and assumes the credit risk and such other obligations as are common to such sales.

GROUP 1

Rule 1—Material. To use or to substitute materials in a structure inferior in quality to those specified by the purchaser or to that required by the applicable governmental laws, rules and regulations in the territory affected, is an unfair trade practice.

Rule 2—Methods of Manufacture and Erection. To use methods of manufacture and erection not in accord with the applicable governmental laws, rules and regulations obtaining in the territory affected is unfair trade practice.

Rule 3—Selling Below Cost. The sale of material below cost for the purpose of injuring a competitor or with the effect of lessening competition or to create a monopoly is unfair trade practice.

Rule 4—Dumping. For steel distributors to sell their products or material below cost or beyond their usual marketing territory or elsewhere for the purpose of injuring a competitor or with the effect of lessening competition is an unfair trade practice.

Rule 5—Commercial Bribery. The secret payment or allowance or acceptance of rebates, commissions, credits, discounts, or like concessions, whether in the form of money or other valuable thing, or any secret understandings or agreements to do work or to furnish material on terms other than those set forth in the contract between the parties is an unfair trade practice.

Rule 6—Defamation of Character. Dissemination of information, false or misleading, relative to competitors' products, selling prices, credit standing, ability to perform work, or labor conditions among competitors' employes is an unfair trade practice.

Rule 7—Check Bids. Knowingly to submit a bid after a contract has been awarded to a distributor with the intent of injuring a competitor is an unfair trade practice.

Rule 8—Discrimination in Price. Any discrimination in price between purchasers, whether subsidiaries of the manufacturers or otherwise, in violation of the Clayton act is an unfair trade practice.

Rule 8-a—For any person, firm or corporation to aid or abet another engaged in unfair trade practice is in itself an unfair trade practice.

GROUP 2

Rule 9—Proper Designs. To recognize uneconomic or an unsafe structural design is condemned by the industry. NOTE: For the purpose of defining that which constitutes a "proper" or "improper" structural design, "proper" design shall fully meet requirements of good engineering practice; likewise all architectural requirements, if any, and all local building code requirements, regulations or governmental laws. Design drawings shall be fully dimensioned so as to locate every piece of steel by at least one set of dimensions. For all classes of structures, the various component members and details of design and any information of an unusual character, shall be shown in sufficient detail as to indicate clearly the fundamentals of the design. Design drawings shall be fully checked by the designer, who shall be responsible for their compliance with the requirements set forth in this resolution.

Rule 10—Regulations of Manufacture and Erection. In territories where no governmental laws, rules, or regulations as to manufacture and erection of buildings prevail, the standard specifications and code of standard practice of the American Institute of Steel Construction Inc. shall be used.

Rule 11—Lump Sum Bidding. It is patent that more intelligent costs can be estimated where the character, scope, quantity, and detail of the work are clearly defined. for which reason the industry urges that bids so far as practicable be made on a lump sum basis from proper designs; but where such method of bidding is impracticable, figuring the final weight in any other way than the accepted practice of the industry as set forth in the standard specifications and code of standard practice of the American Institute of Steel Construction Inc. unless otherwise specifically set forth in the invitation to bidders, is condemned by the industry.

Rule 12—Misrepresentation. Misleading promises of delivery and performance that cannot reasonably be fulfilled and misleading statements as to ability to perform the work is condemned by the industry.

Rule 13—Unrequested Bids. To subvert a custom prevailing in the trade to submit a bid without having been requested or invited to do so is condemned by the industry.

Rule 14—Reopened Bidding. It is a frequent practice for steel distributors to submit bids to general contractors who in turn use the lowest acceptable price in making up their bids on a general contract. Many general contractors after securing the general contract, then reopen the bidding for the same operation, commonly known as "shopping," which practice lowers the standard and quality of building construction. For steel distributors to make bids under such circumstances is condemned by the industry.

Rule 15—It is recommended to the manufacturers of structural steel that they independently publish and observe price differentials to cover the increased cost of materials sold in less than carload quantities.

RESOLUTIONS

1—RESOLVED, That a committee of five appointed by this conference be empowered to draft and present to the industry for their approval standard proposal and contract forms; and that such committee is directed to prepare such forms at as early a day as practicable after this code becomes effective and that the present committee on code of practice be appointed.

2—RESOLVED, That a committee on trade practices be created and empowered to investigate and determine whether those resolutions are being observed, to make complaints concerning alleged violations, to cooperate with the federal trade commission, and generally to perform such other acts as may be reasonably necessary and proper to put these resolutions into effect and accomplish the objects and purposes of this Conference. The American Institute of Steel Construction Inc. is empowered by this conference to appoint said committee.

tained from full-sized specimens and would be free from uncertainty regarding fundamental assumptions. The following conclusions were developed:

(a) The load exerted by a column on a slab uniformly distributed;

(b) The yield point of a slab in bending is considerably higher than that which would be computed using the tensile yield point stress in the flexure relation $s = Mc/I$.

(c) In design, the load from the footing should be assumed as being uniformly distributed;

(d) The maximum bending moment in a slab occurs at the principal axes;

(e) In general, a square slab is not economical;

(f) A slab can be designed so that it will bend equally about the two principal axes, and will reach its yield point in bending when the column reaches its maximum load and the footing begins to crumble;

(g) The column web should always be placed parallel to the long dimension of a slab;

(h) The area of a slab can be diminished only by using masonry or concrete of higher strength.

Wilbur A. Claflin, assistant supervisor, real estate loan department, Prudential Insurance Co. of America Newark, N. J., spoke on life insurance and its relation to business.

Hails Trade Conference as Aid to Business

BROAD policies of the relationship of government to business, the attitude of manufacturers to consumers and the influence of steel in international co-operation were touched upon at the annual banquet Thursday evening.

President Charles N. Fitts first introduced William E. Humphrey, federal trade commission, Washington, who in a carefully worded statement gave his views on the anti-trust laws. He said:

"When Congress passes an act, that is not the law in the sense in which it is generally received. No one knows what the law really is and cannot say that a statute has been really written until the courts have construed it. The Sherman law was of necessity in general terms. No one knows its full meaning. It has cost the country tremendously during the many years since its enactment trying to find this out. We know that as part of the statute the judicial determination of its words and phrases is read into it by the courts in numerous decisions. These decisions also interpret correctly the force and effect of the public policy of our anti-trust legislation.

"At last, after the lapse of 40 years, lawyers and courts are able to give with reasonable certainty the law applicable to any given state of facts. Is it advisable to again travel this long and burdensome road of discouragement, confusion and business disturbance? What is to be gained by it? To supply the omissions in the Sherman law made manifest by years of costly experience, the Federal Trade Commission Act and the Clayton Act were passed. Both are supplemental to the Sherman law. Both are in general terms. Both are being slowly interpreted by the courts. Both yet need many decisions to make more clear their full intent.

". . . To repeal or radically amend them, would be to turn back the clock of progress a third of a century. It may be true, as the years go by, that experience will show that it will be wise to pass supplemental statutes to broaden the fundamental principles of the present anti-trust laws.

"Shall the anti-trust laws be repealed or radically amended at this time? I cannot but believe it is safest and best for American business to rely upon an ever continuing series of decisions of the Supreme Court of the United States in its constant adaptation of unchanging law to ever changing conditions."

Commissioner Humphrey devoted a large part of his address to a comparison of the present policy of trade practice conferences with the old practice of litigation. Under the old system, he explained, when a complaint was received an ex parte investigation was made. Upon such an investigation a complaint was issued against the respondent and immediately the commission itself officially gave out publicity as to the charges against the respondent. Such publicity, coming with official stamp, was given wide circulation. It sometimes happened that the respondent knew nothing of the matter until it saw itself advertised as a crook and never was the respondent given an opportunity to be heard before such publicity was issued. Sometimes months afterwards, it was found the respondent was entirely innocent and the case was dismissed. The injury done to the respondent, the poison injected into the public mind was not removed by the dismissal of the case.

Policy Since Abandoned

"This unjust and tyrannical policy has been abandoned by the federal trade commission, and I believe forever," declared the commission, who then described the trade practice conference plan:

"The commission under its present policies, believes that one of the most effective ways to protect the public from unfair practices is to help business rid itself of such practices.

"The trade practice conference is the co-operation of the commission with an industry as a whole to rid itself of any unfair practice. This plan may be defined as one to give an industry an opportunity to clean its own house. In an industry where dishonest practices prevail, it is a plan to give the industry an opportunity to achieve decency instead of having the government thrust decency upon it.

"When a sufficient number of the members of an industry, to give reasonable assurance of its success, request it, the commission will call a conference with those engaged in the industry, and a member of the commission will preside over that conference. It is a conference of the industry. Those composing the industry run and control the conference."

Mr. Humphrey stated that 83 conferences have been held with gratifying results. "The new policy has been received with greater favor than any other plan that the government has ever proposed to bring about honesty in business. The commission today has the confidence of business as never before."

Mrs. Christine Frederick, director, Applecroft Home Experiment station, Greenlawn, L. I., N. Y., spoke on woman's influence on steel purchases. After emphasizing the buying power of women, which is indicated by their annual purchases of $52,000,000,000 of commodities, Mrs. Frederick declared America is on the threshold of a new business era—the consumer age—in which "both industry and business will unite to lift still more burdens from the back of 'Mrs. Consumer'."

According to the speaker, Mrs. Consumer already has placed her approval on steel.

"Open the door and come into the kitchen with me. Do you not see that we have changed from the old wooden table which absorbed grease and stains and which took endless hours of scrubbing, to the shining steel table which can be made spotless in a moment? Note the kitchen

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Fabricators Adopt Code of Trade Practice

THE code of trade practice which was adopted by the conference of structural steel fabricators at Biloxi, Miss., Nov. 11, *as announced on page* 1268 *of last weeks issue of* IRON TRADE REVIEW, *is presented on the opposite page. It appears with all amendments and additions as finally approved by the conference for submitting to the federal trade commission.*

THE EDITORS

Sees Expanding Applications in Welding with Oxyacetylene

International Acetylene Association Conducting Thirtieth Annual Convention Regards Possibilities Promising—Oxyacetylene Committee Reports

OPTIMISTIC views as to the probability of expansion of the gas welding industry in metalworking fields in the immediate future were expressed at the thirtieth annual convention of the International Acetylene association held at the Congress hotel, Chicago, Nov. 13, 14 and 15. Research and development work are decidedly promising, it was pointed out.

Much consideration was given safety and fire elimination problems, with special sessions being devoted to welding test methods and welding in aviation, structural steel, pipeline and chemical fields. The convention was opened by L. F. Loutrel, Shawinigan Products Corp., New York, retiring president of the association. An attendance record was established and a number of firms were admitted as new members.

The Morehead medal was awarded posthumously to the late Samuel Wylie Miller, consulting engineer, Union Carbide & Carbon Research Laboratories Inc., Long Island City, N. Y., "for his pioneer work in the metallurgy and engineering of welding." Mr. Miller, an international authority on welding, died Feb. 3, 1929.

A comprehensive report was presented by the oxyacetylene committee of the association, being in the nature of a continuation of the report presented at the meeting last year. A review of progress for the year in such branches of welding as procedure control, welding research, and welding activity in engineering schools, steel foundries, steel mills, the automotive and aviation industries was contained in the report.

Hysteria in the securities market should give little concern to business and industrial groups, it was stated by Eugene M. Stevens, president of the Continental Illinois Bank & Trust Co., Chicago, in welcoming the delegates. "Concerned with looking at hard facts, business men are not carried away by mob psychology," Mr. Stevens asserted.

Welding Is Called "Tailor" of Industry

BENNETT CHAPPEL, vice president, American Rolling Mill Co., Middletown, O., painted a glowing picture of the broad possibilities in welded steel construction for the future, and said that tremendous possibilities exist for wider use of steel sheets. With the perfection of a cheaper and better quality product, any industry will find the markets of the world opening up, and the next 50 years should see steel sheets transcendent in the steel industry, Mr. Chappel said.

He described the welding industry as the "tailor" of the steel industry, which literally sews together steel members into useful raiment. The speaker predicted great possibilities in the use of steel for welded superhighways, concrete highways with solid metal bases, welded metal bathrooms for homes, shipped complete like automobiles, vast systems of welded pipe lines, and further progress in the adoption of welded floors for buildings.

In the structural steel session it was pointed out that progress has been general and has provided a broader knowledge of the fundamentals of this branch of construction welding. It was pointed out that gas cutting has been used more extensively during the year in operations involving shaping and dimensioning structural materials.

Welding Operation Quiet

H. H. Moss, development engineer, Linde Air Products Co., New York, discussed "Oxyacetylene Welding and Cutting of Structural Steel," stating that the utility of welding in unusual construction is not the least of its desirable features. He predicted that the noiselessness of welding operations will have an important bearing on future construction, and he stated the supporting structures of buildings of the future may become much different because of the facility which welding provides in constructing steel materials.

It was pointed out that remarkable warpage control was obtained in the 300-ton welded research building erected at Niagara Falls, N. Y., in the past year.

H. M. Priest, American Bridge Co., New York, declared that for certain types of industrial and tier buildings, welding offers possibilities in the reduction of steel required, in the simplification of details, and a more flexible adaptation of the steel to architectural requirements.

Welding in structural steel fabrication, Mr. Priest said, is rapidly becoming an adjunct of the riveting process. Repairs or additions often can be carried out most advantageously by employing the welding process. He pointed out that the field is widening constantly. Present practice virtually limits the butt weld to compression joints and uses the fillet weld for shear and tension in addition to compression, and the more nearly the welding can be kept to these conditions, the less will be the expenditure of time and gases in obtaining satisfactory results.

Much interest was shown in the aircraft session where phases of funda-

mentals of welding as applied to the building of airplanes were presented by a number of speakers and discussed at length.

J. B. Johnson, chief of the material branch, war department, Wright field, Dayton, O., gave a paper on "Oxyacetylene Welding as Applied to Aircraft Construction." He described test results of welded steel fuselages continuously in service since 1924, which showed the welded construction with little deterioration in that time, and suggested qualification tests for welders now in use at army fields. Sound engineering practice is to heat treat welded joints, and in the past few months the field for heat-treated parts has broadened, Mr. Johnson pointed out, and added that designers are now using welded and heat-treated wing beams, control surfaces and sub-assemblies in the fuselage.

Careful Designing Required

Kendall Perkins, Curtiss-Robertson Airplane Mfg. Co., St. Louis, discussed "Two Fundamentals in Aircraft Welding." Asserting that perhaps the greatest weakness of the welding method in this and its other applications lies in its inherent dependence upon skillful design — conscientious workmanship—he cited two fundamental considerations. First, that chrome-molybdenum steel, when welded, becomes harder and stronger next to the joint, but softer and weaker a small distance away; and second, that the strength of the weld itself depends upon the care which is taken in keeping the "critical section" outside the joint proper. He pointed out that in tension tests members fall away from the weld; in compression, they buckle at the ends and bend in the middle, or near the welded joints; when subjected to bending the failure is similar to that in the compression test; and in vibration the failure occurs usually immediately adjacent to the fillet.

Russell F. Hardy, chief engineer of the Waco Aircraft Co., Troy, O., discussed aircraft welding, including the development of an efficient welding department. "Many of the major structural units of the airplane, such as the landing gear, fuselage, and empennage, receive their strength through the fabrication of steel tubing by welding," he said. "Consequently it should be the desire of every manufacturer to develop the welding department to its highest efficiency."

Other papers were by Charles E. Kirkbridge Jr., assistant chief draftsman, Naval Aircraft factory, Philadelphia; Paul D. Paine, supervisor of ground schools, Universal Aviation Corp., St. Louis, and E. P. Warner, former assistant secretary of the Navy for aeronautics, New York.

The testing session brought out animated discussion on various applications of standard tests. A critical discussion of test methods, including destructive and nondestructive tests of welds, prepared by J. R. Dawson and A. B. Kinzel, Union Carbide & Carbon Research Laboratories Inc., Long Island City, N. Y., was presented to the convention. The bend test was described as the most valuable of the destructive tests, although the most extensively used is the static tensile test. Other tests such as fatigue, Izod and hardness exploration were used to a limited extent, but these were found in the class of research tools. Among the nondestructive tests the standard hydrostatic test at two or three times the working pressure was found much in vogue for closed vessels. The bend test was regarded as advantageous because it is a quick means of testing, requiring no special apparatus, and also because the information regarding ductility of the welded specimen as determined in the usual tensile test is regarded as unsatisfactory.

Discuss Other Applications

C. W. Obert, secretary of the boiler code committee, American Society of Mechanical Engineers, outlined the attitude of authorities toward the welding of boilers, pressure vessels and steam lines.

W. C. Swift, service engineer, American Brass Company, Waterbury, Conn., presented a paper prepared by W. R. Hibbard, technical department of that company, on "Oxyacetylene Welding of Copper." He pointed out that deoxidized copper has been found to be a ready subject for sound, strong welding, although having somewhat less electrical conductivity than electrolytic copper.

Paul Ullmer, of Gould Pumps Inc., Seneca Falls, N. Y., presented a paper prepared by himself and T. I. S. Boak, of the same company, on oxyacetylene welding in the pump industry.

Oxyacetylene Committee Reports Progress

PRESENTING a report of more than 80 printed pages, the oxyacetylene committee of the association emphasized that analysis of the data submitted indicated a healthy, normal growth, successful competition with competitive methods, and a certainty that research and development work will continue to offer the industry opportunities for expansion "whose ultimate limits at this time are not approached." The report was a continuation of the extensive survey of a year ago which was the most complete report ever printed on oxyacetylene welding. Subjects discussed in the report included the following:

Procedure control—Builders of pipe lines, of pressure vessels, of welded steel structures and airplanes are all following procedure control methods, although not to the extent desired. In the rapidly growing industry of structural welding, procedure control methods are considered essential. Code-making bodies are practically writing procedure control into their various codes.

Research in welding—The oxyacetylene industry is rapidly approaching the day when complete information will be available universally. An example of this is the recently published code of the American Welding society for fusion welding and gas cutting on structural steel. A new process or material should never be used commercially until the laboratory results show that this is practicable.

Steel foundries—During the past year the position of the oxyacetylene process in each of the separate applications has been strengthened, while considerable advance has been made in adapting it to new or previously undeveloped foundry problems. Removal of risers by oxyacetylene cutting continues to form the greater part of the oxyacetylene

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Officers Elected

President

C. A. McCUNE
Director of research, American Chain Co., Bridgeport, Conn.

Vice President

W. D. FLANNERY
Vice president, K-G Welding & Cutting Co. Inc., New York

Secretary-treasurer

A. CRESSY MORRISON (re-elected)
New York

Board of Directors

Re-elected: W. C. Keeley Jr., National Carbide Co., New York; R. A. Sossong, Air Reduction Sales Co., New York; H. B. Pearson, Burdett Oxygen Co., Chicago; W. A. Slack, Torchweld Equipment Co., Chicago; L. E. Ogden, Oxweld Acetylene Co., New York; E. L. Davis, Acetylene Stove Mfg. Co., Cleveland; H. S. Smith, Prest-O-Lite Co. Inc., New York; J. A. Johnson, Johnson Mfg. Co., Crawfordsville, Ind. Newly elected: L. F. Loutrel, Shawinigan Products Corp., New York.

Electricity Is Finding Wider Use in Metalworking Industries

Heating and Welding Discussed at Third Annual Conference Sponsored by Pennsylvania State College and Iron and Steel Engineers

USE of electricity in the making, treating and welding of steel, and recent developments in this practice provided the subject for considerable discussion at the third annual electric heating and welding conference held in Pittsburgh, Wednesday and Thursday, Nov. 13 and 14, under the auspices of Pennsylvania State college and the Association of Iron and Steel Electrical Engineers.

Speaking on "Some Recent Developments in Arc Welding," K. L. Hansen, Northwestern Mfg. Co., Milwaukee, described work being done in alloy steel welding, particularly in the hard facing of parts subject to abrasion, such as bits for oil well drilling tools and gear teeth. This practice permits the building up of a hard surface of alloy steel at points suffering wear instead of making the entire part from such material. A welding process used in building up surfaces of worn rail ends also was described. Stating that although welding of nonferrous metals generally has been undertaken on only a limited scale, Mr. Hansen pointed out that manufacturers of electric motors for a number of years have employed welding in forming the end ring from projections of the rotor bars of induction motors.

Tangible Values Seen

Advantages in use of electric heating that usually have been considered of an intangible nature actually have tangible values that can be translated into savings of dollars and cents, declared Wirt Scott, special engineer, Westinghouse Electric & Mfg. Co., Mansfield, O., in his talk on "The Tangible Advantages of Electric Heating." Results of surveys on electric heat treating installations, he stated, form a basis for ascribing approximate savings on the various advantages inherent in this type of equipment as compared with the use of other types of fuel. These advantages are as follows: Improved quality, dependable production, less stock in manufacturing, less floor space, decrease in cost of labor, saving in inspection and test of product, decrease in labor necessary after heat treatment, saving in labor in starting furnaces, better working conditions, improvement of general operating characteristics including improved efficiency of workers, less handling of materials, less accessory equipment, reduction in accidents, reduction in fire hazard, reduction in maintenance, reduction in scrap, reduction in field expense, and value of better shop appearance. On a typical installation Mr. Scott estimated a net saving equal to a return of about 8 per cent.

Welding Creates New Market

Discussing "Electric Welding of Heavy Materials," J. F. Lincoln, vice president, Lincoln Electric Co., Cleveland, stated that the steel industry has a potential market for from 2,500,000 to 3,000,000 tons of steel annually in the replacement of that portion of the iron casting output to which the use of welded rolled steel material is adaptable. Illustrations were shown of various types of equipment built up of rolled steel products. This paper prompted some discussion of the electric welding of pipe and the metallic arc, carbon arc and resistance processes now in use.

James Kniveton of Ryan, Scully & Co., Philadelphia, spoke on "The Electric Annealing Furnace" pointing out the advantages of uniform heat distribution and accurate temperature control of this type of equipment. The small box and continuous types of furnaces are particularly adaptable to electric heat, he stated. Mr. Kniveton deplored the efforts of certain power associations to color the advantages in use of various sources of heat. The proper type of resistors for use in the electric annealing furnace is subject to opinion. Refractories play an important part in the efficiency of the furnace, he stated.

Various types of steel melting furnaces were described by Frank W. Brooks, chief engineer, William Swindell & Bros., Pittsburgh, at the morning session, Nov. 14. Mr. Brooks discussed briefly the development of steel melting furnaces from the time of the crucible type down through the period when the bessemer was in vogue to the present open-hearth and electric furnaces. Production of electric steel for use in making steel castings, he pointed out, has increased from 0.01 to 25 per cent of the total during the 20-year period just passed.

The direct arc and indirect arc resistance furnaces were the types principally described, although the core-type and coreless-type of induction furnaces also were discussed. The use of the automatic regulator in raising and lowering of the carbon electrodes in the direct arc resistance furnace is one of the most important developments in this field, Mr. Brooks stated, pointing out the need for maintaining a constant current input in the melt.

Acid furnaces are used generally for melting steel, with the basic type reserved largely for refining work, the speaker stated. The indirect arc resistance furnace finds its greatest application in the nonferrous industry. Illustrations were shown of typical installations of the various types of equipment described. Later discussion centered largely on the development and use of the core-type or high-frequency induction furnace.

Considers Temperature Control

Advantages of obtaining uniform heating and closely regulated temperatures were emphasized by A. E. Bellis, president, Bellis Heat Treating Co., Branford, Conn., in his talk on "Electric Salt Bath Furnace." Chemistry, metallurgy and electrical engineering all enter into the subject of providing a satisfactory electric salt bath furnace. The obtaining of the correct temperature in the bath is more important than the rates of

heating or cooling, Mr. Bellis declared.

"Electric Galvanizing" presented by R. M. Cherry, General Electric Co., Schenectady, N. Y., stimulated considerable discussion on the relative merits of electric and gas heating. Use of electricity provides uniform heating and coating and through a resultant saving in zinc consumption offsets the additional cost of electricity, it was stated. The cost of maintenance of the galvanizing tank depends upon its size and operating temperature, while its life varies with the type of work done. The quality of work produced largely is dependent upon the temperature of the bath and ability of the operator, provided uniform heating is accomplished, according to the speaker. Proponents of gas heating pointed out that considerable development has taken place in providing uniform heat distribution in use of this fuel.

Tool steel, more than any other branch of the metals industry, has profited from the use of electricity, declared Owen K. Parmiter, metallurgical engineer, Firth-Sterling Steel Co., McKeesport, Pa., in his paper on "Use of Electricity in Development of Tool Steels." By providing automatic control electricity has eliminated the human element to a large extent in tool steel production; electricity has made possible a greater uniformity of chemical composition over various heats; it has provided a steel that is chemically purer; it has made possible the addition of alloys in the furnace rather than in the ladle; and the electric furnace has an economical value in the recovery of alloys present in scrap, Mr. Parmiter pointed out. Electricity also has been valuable in the development of mills for the rolling of alloy tool steels and of apparatus for the testing and inspection of materials.

The conference was concluded with a dinner Thursday evening in the William Penn hotel. Lieut. Commander C. E. Rosendahl, United States navy, the principal speaker, related his engineering impressions and experiences aboard the GRAF ZEPPELIN on its flight around the world.

Sees Expanding Uses of Acetylene Welding

(*Continued from Page* 1313)

consumption in the steel foundry.

Cast iron—The use of the process in the reclamation of defective castings forms the greater part of the gas consumption in gray iron foundries. A striking example of the adaptability of bronze welding was shown in the welding of steel baffle plates to cast iron flasks. These plates were used to overcome the shifting of the sand in transporting the completed mold. The plates were cut with a blowpipe and welded to the sides of the flask. "Double-lengthening" of cast iron pipe by bronze welding at the pipe foundry has received a decided impetus in the west.

Malleable iron—Little progress has been made in the repair of castings in the white iron state. This is partly due to the conservative stand of malleable iron founders, influenced by past experience of inferior material obtained after annealing heats slightly off in chemical composition. The oxygen lance is used as an emergency tool for opening frozen tap holes. While the task of opening the tap hole in routine tapping does not approach that of an open-hearth furnace, the oxygen lance is a handy emergency tool for the air furnace common to malleable iron foundries.

Specific Problems Arise

Nonferrous foundries—The various types and special properties of the different alloys falling in this group present individual problems in the application of oxyacetylene welding. Welding of bronze is applied in the assembling of bronze cast figures for ornamental work and monuments. Reclamation of castings in bronze foundries is not general, the common process being to remelt the castings due to the loss of volatile components in welding. The oxyacetylene process has been used to advantage in the removal of risers from bronze castings.

Steel mills—During the past year the steel mills seem to have been using oxyacetylene welding and cutting as much as ever. These applications are so varied that they extend from oxygen tapping to emergency illumination. The outstanding applications, however, are oxyacetylene cutting and oxyacetylene welding. A few years ago the process was hampered by insufficient means of manifolding cylinders and regulating large volumes of oxygen.

Structural steel—Progress has been general and has provided a broader knowledge of the fundamentals of this branch of construction welding and considerable applied data. Regulatory matter in the form of a building code for structural welding has been prepared and distributed throughout this country and Canada. Conversion studies have been made on a number of types of steel building frames, resulting in the production of many simple connection designs for column, girder and beam details having particular suitability for gas welding. The year has witnessed the successful construction of a large industrial type building unit entirely fabricated by gas welding. Gas cutting has been used much more extensively this past year for shaping and dimensioning structural materials.

Automobile production industry—Giving due consideration to all the leading methods of welding applied in the production of all steel automobile bodies, the oxyacetylene welding torch surpasses in usefulness all other methods. When applied correctly by the intelligent operator it is without doubt unrivaled and could rightfully be termed a universal tool. The development of the newer alloy and stainless steels has opened up a new field in the machine departments and while certain corrections are possible with other methods of welding, the welding torch lends itself quite readily to making a practical and permanent weld.

Aircraft industry — Developments during the past year in the aircraft industry show that the oxyacetylene process is not only more firmly established than ever in this rapidly growing business but it is now entirely reasonable to state that oxyacetylene welding has become the standard method of steel fabrication of commercial aircraft.

Pipe lines—This year has seen the welded lines become standard for oil and gas service. Without exception the oil trunk lines, which are generally from 8 to 12 inches in diameter, have been welded, and with the exception of one major installation, they have been oxyacetylene welded. With one exception, the gas trunk lines have been welded, about one-half of them having been electrically welded. It is difficult to predict the extent of oxyacetylene pipe-line welding for next year, but some large projects are under consideration.

More Confidence Evident

Bronze and copper welding—During the past year there has been a steady growth of confidence in the strength of bronze welds that has given welders familiar with this process the courage to use it on ever larger and more important work. It has become their accepted process for the repair of broken frames of large presses, steam hammers, bulldozers, crushers and the heavy shears used for cutting steel in scrap iron yards. The use of phosphor bronze, silicon bronze and other special compositions is growing rapidly for coating surfaces subject to wear but difficult to lubricate. Deoxidized copper has been found to lend itself readily to sound, strong welding although it has somewhat less

(*Concluded on Page* 1317)

This high production milling machine is in constant use on one part of a universal joint.

154th Article — *Universal Joints*

Large Uses of Steel in Small Ways

MORE than 40,000 tons of steel is consumed annually in the United States in the manufacture of universal joints. The bulk of this tonnage goes into the automotive field where the universal joint has become the standard means of transmitting power from the engine to the rear axle of automobiles and trucks. In the early design of automobiles this power transmission was by means of belts, gearing and chains but these have been gradually superseded by the universal joint due to its compactness, freedom from dust and low friction losses.

One company uses two different steels for its forgings for universal joints. One of these has carbon from 0.40 to 0.50 per cent; manganese 1.4; sulphur 0.045; and phosphorus 0.05. The other steel used has a carbon content of 0.15 to 0.25 per cent; manganese 1 to 1.30; sulphur 0.10 to 01.5; and phosphorus less than 0.045.

Tubing Replaces Solid Bars

Tubing is second in importance to forgings in the construction of universal joints. The tubing in the standard design connects two joint assemblies and transmits a torsional load. At first solid bars were used for this purpose, but the demand for lighter construction led to the adoption of tubing. The first tubing used was seamless drawn, with heavy walls. The present tendency is to use a welded tubing made from sheet steel with a thickness of about 0.083-inch. One company which has made a specialty of developing this welded tubing uses for the purposes steel of the following analysis: Carbon from 0.08 to 0.12 per cent; phosphorus 0.045; manganese 0.30 to 0.60; and sulphur 0.03.

The modern universal joint which is sometimes spoken of as a propeller shaft consists of two universal joints, one at each end of the tubing member. One of these joints in addition to its universal feature drives through a sliding pinion so as to permit variation in length. The actual universal joints or joint assembly, as it is frequently called, consists of a piece carrying four bearings in pairs on right angle axes. This piece, known as the journal, has the rough shape of a four pointed star. Two opposite bearings are supported from the engine shaft or differential shaft, and the other two bearings are supported from the tubing or shaft portion of the universal joint.

Production Is Enormous

Some idea of the extent of the universal joint industry may be gained from the fact that one eastern plant produces an average of 260,000 complete joints a month. To secure this high production at low cost has meant the development of many accurate automatic and semiautomatic machining operations. The forgings follow through a sequence of heat treatment and machine finishing which calls for a minimum of labor and the use of the best equipment. One of the large manufacturers uses an automatic electric furnace for heat treatment, an automatic electric welding machine for joining the tubing to the end assembly, and conveyor belts for transporting the parts in process from one machine tool to another. Interchangeability of all parts is a feature of the automobile universal joint and this is secured through extremely accurate machining operations and careful inspection.

A large part of the output of a universal joint plant in Pennsylvania is shipped to Detroit. Some years ago the completed joints were boxed at

THIS is the one hundred fifty-fourth of a series of articles dealing with some of the obscure uses of steel which go far toward absorbing the American tonnage.

Among articles appearing every two weeks and not included in Vol. I containing 51 separate descriptions are:

Fire Screens	*Cork Screws*
Voting Machines	*Universal Shafts*
Display Racks	*Sewing Machines*
Steel Stamps	*Lanterns*
Wire Screens	*Cleats*
Typewriter Spools	*Axes*
Chain Hoists	*Steel Ceilings*
Newspaper-Vending Boxes	*Card Tables*
	Welding Rods
Wire Lamp Shades	*Washing Machines*
Belt Fasteners	*Resilient Road Guards*
Sap Spouts	*Screw Drivers*
Flexible Conductors	*Windows*
Foundry Flasks	*Car and Bus Seats*
Teletype Machines	*Bathroom Cabinets*
Porch Furniture	*Lock Washers*
Telegraph Wire	*Steel Scaffolding*
Waste Receptacles	*Pavement Armor*
Chain Screens	*Torches*
Louvred Ventilators	*Ironing Machines*

the plant where they were made and then unboxed at the automobile manufacturer's plant. All this labor and expense has been eliminated. The completed shafts are securely packed in metal skid boxes or containers designed for use with lift trucks. The cars are then loaded by means of the lift trucks starting at both ends and working back toward the center. When the loading has been completed the two groups or piles of containers are shored apart to prevent any movement during transit and the car then leaves for the automobile plant where the process is reversed and the universal joints are quickly unloaded with other lift trucks.

Many different types of universal joints are used throughout industry, but the tonnage represented outside of the automobile field is relatively small. Some locomotives used small universal joints on the control rod in order to bring the control in a convenient position for the engineer. Machine tool builders make use of small universal joints where a tool head is to be operated in various positions. This is particularly true in the case of multiple spindle drills. The new front wheel drive automobiles require two universal joints where the conventional design requires one.

Sees Expanding Uses of Acetylene Welding

(*Concluded from Page* 1315)

electrical conductivity than electrolytic copper.

Machine cutting — Machine cutting has progressed materially in the direction of mass fabrication, or as it may better be called, replacing of castings by steel elements shaped by automatic cutting machines and fabricated by welding and perhaps bending. It is already agreed by concerns fabricating by machine cutting that it is one of the most outstanding developments in the history of machine design.

Scrapping and scrap yards—In the past year the oxyacetylene cutting blowpipe has continued to play an increasingly important part in the operation of scrap yards. It is a tool whereby the commercial continuance of that industry at a profit has been furthered. Gas cutting for systemic scrapping has reached a point where it may be considered a production program and such programs have been carefully developed in the last few years. Technical studies and engineering revision of scrapping processes should be fostered by the industry with the object of further increasing the use of the oxyacetylene cutting process in scrapping where it finds a natural field.

Heat treatment—As an added accessory to the heat treating department or as a tool for the application of local treatment the oxyacetylene welding torch has proven valuable. The torch also has found some application in the local cyaniding of small areas which service requires to be hard to resist wear.

The oxyacetylene committee was headed by W. D. Flannery, KG Welding & Cutting Co., New York. The committee acknowledged co-operation of more than 40 authorities in the preparation of its report.

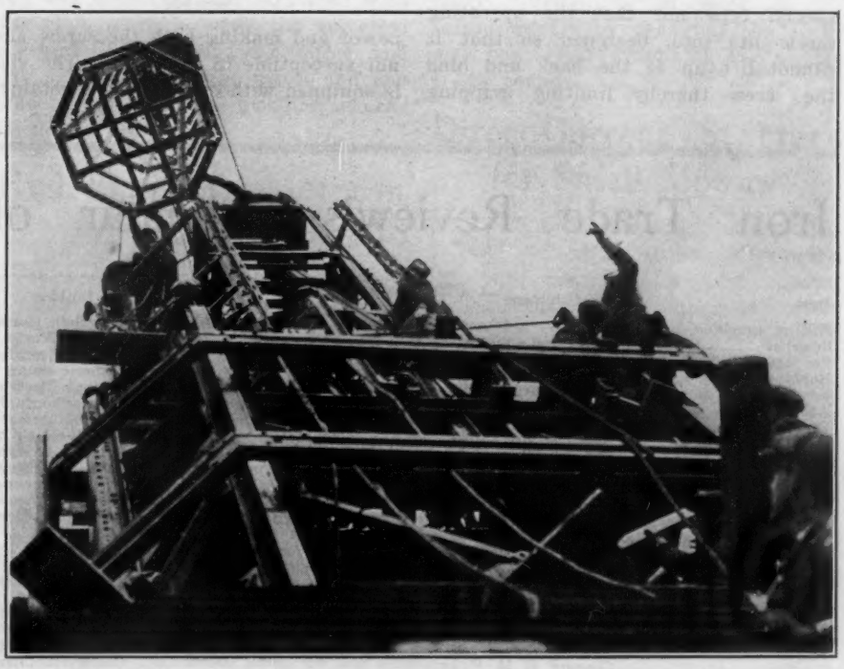
Structural Steel for Manhattan Bank Goes Up in Record-Breaking Time

SPEED records in structural steel erection were broken Nov. 13 when the steel cap, with beacon, star and pinnacle, was hoisted into place atop the Bank of Manhattan Co. skyscraper, Wall street, New York. This fabricated section, shown in the accompanying illustration, crowns the highest commercial building in the world, rising 925 feet 4 inches in the heart of the financial district. The Woolworth building, also in New York, is 792 feet high.

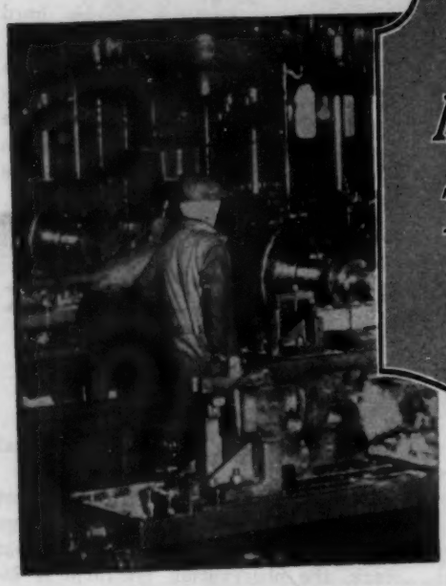
Steel work on this 70-story building was started July 1. A feature in the engineering program was the sinking and pouring of more than 50 reinforced concrete piers for the foundation while the wrecking of the old buildings on the site was in progress. Wrecking work had commenced May 1. Construction work has been featured by the co-operation of the various engineering units engaged. Starrett Bros. Inc. are the general contractors.

The great steel pile rises 900 feet above the sidewalk before the large "cap" is reached. At the 845-foot mark, the observation platform is located, about 125 feet higher than the observation platform on the Eiffel Towers, Paris. More than 20,000 tons of structural shapes were required for the bank building.

Outer walls of brick are nearing completion on all sides. Elevator rails and shafts are up to the 60th floor, while a large part of the interior, mesh reinforced cement flooring, plastering and marble is finished. The skyscraper, which for the time at least, holds the record for height, will be ready for occupancy May 1, 1930, being completed in less than one year and thereby breaking all records for speed in modern skyscraper construction.



Last piece of structural steel being hoisted into place atop the Bank of Manhattan Co. building, New York, the highest commercial structure in the world. The building stands 925 feet 4 inches high



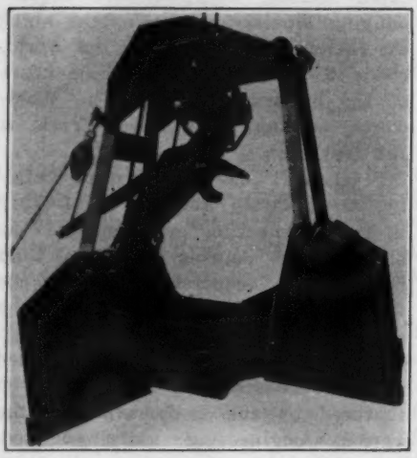
New Machine Tools and Shop Equipment

"Without tools man is nothing, with tools he is all."—Carlyle

New Vise Is Built with Swivel Back Jaw

No. 247

Simplex Tool Co., Woonsocket, R. I., recently has developed a new swivel back jaw vise, the back jaw of which is made in two parts, the top part of which swivels, making it possible to hold irregular shaped pieces in the vise. This top part is provided with a pin that locks it to the back jaw when the swivel feature is not desired. The vise is made with a steel slide, that is, the sliding member of the front jaw is machined out of a solid bar of steel, making this part practically unbreakable. It has a special type nut that the operating screw fits into, designed so that it cannot lift up at the back and bind the screw thereby limiting gripping power and making both the screw and nut susceptible to breakage. The vise is equipped with outside screw retainer and removable jaw inserts which are dowelled as well as screwed on.



No. 248—Grab bucket with welded assembly

Single Hook Grab Bucket Partly Welded

No. 248

Edgar E. Brosius Inc., Sharpsburg, Pa., is introducing a new ½-cubic yard single hook grab bucket of welded construction, as shown in the accompanying illustration. With the exception of the lips the bucket is built up of plates and structural shapes, electrically welded throughout. The lips are of manganese steel and are riveted to the scoops. The bucket can be attached to any crane or hoist by throwing the hook block of the bucket over the hook of the crane. It trips by hand line from the operator's cage or ground and opens without shock

Iron Trade Review's Calendar of New Equipment

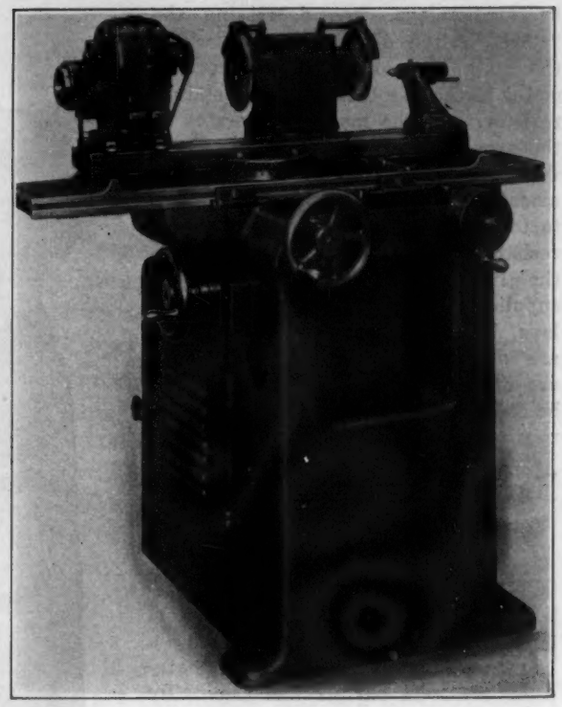
Item	Comment	Builder	No.	Date Described	Page
Milling machine	Bed-type; automatically-operated, hydraulic feeds	Oesterlein Machine Co.	230	Oct. 24	1044
Rougher	Four-spindle manufacturing type; for straight bevel gears	Gleason Works	231	Oct. 24	1045
Regulator	Two-stage pressure regulator for oxygen tanks	Oxweld Acetylene Co	232	Oct. 24	1045
Hobbing machine	Production-type for roughing and finishing spur gears	Barber-Colman Co.	233	Oct. 24	1046
Arc welder	300-ampere generator powered by 6-cylinder engine	General Electric Co.	234	Oct. 24	1046
Arc welder	Gasoline or electric drive; 300-ampere generator	Westinghouse Electric & Mfg. Co.	235	Oct. 31	1114
Starter	Across-the-line enclosed starter for direct-current motors	Cutler-Hammer Inc.	236	Oct. 31	1114
Meter	Indicates pressure between welding electrodes; hydraulic	Gibb Welding Machines Co	237	Oct. 31	1115
Hoist	Differential chain hoist; aluminum finish	Robbins & Myers Inc	238	Oct. 31	1115
Drill	High-speed type, sliding head; bench and pedestal models	Buffalo Forge Co.	239	Oct. 31	1115
Grinder	Portable pneumatic; rotary air motor drive	Chicago Pneumatic Tool Co	240	Oct. 31	1115
Lathes	Selective-type headstocks; 14 and 16-inch sizes	Boye & Emmes Machine Tool Co	241	Oct. 31	1116
Grinders	Electric; 7-inch flexible disk and 7-inch bench types	Van Dorn Electric Tool Co	242	Oct. 31	1116
Hacksaw	Also attachment to accommodate broken blades	Forsberg Mfg. Co	243	Oct. 31	1116
Drill	Rotary pneumatic; 1½-inch drilling capacity	Independent Pneumatic Tool Co	244	Oct. 31	1116
Lathe	Production type; equipped for high-speed operation	Cincinnati Lathe & Tool Co	245	Nov. 7	1185
Grinders	Heavy-duty electric; 5, 7½ and 10-horsepower capacities	Hammond Machinery Builders Inc.	246	Nov. 7	1185
Vise	Back jaw may be swiveled; built with steel slide	Simplex Tool Co.	247	Nov. 21	1318
Bucket	Grab bucket of welded construction; ½-yard capacity	Edgar E. Brosius Inc	248	Nov. 21	1318
Grinder	Cutter grinder; table may be swiveled	Cincinnati Milling Machine Co	249	Nov. 21	1319
Sander	High-frequency portable sander for light work	Porter-Cable Machine Co.	250	Nov. 21	1319
Starter	Counter E. M. F. automatic type for small motors	Cutler-Hammer Inc.	251	Nov. 21	1319
Stapling machine	Drives staples in barrel or keg heads	E. H. Titchener & Co.	252	Nov. 21	1320
Grinder	For high-speed snagging; new power transmission	United States Electrical Tool Co.	253	Nov. 21	1320

to the crane or bucket. The manufacturer claims a low maintenance cost for the unit.

Cutter Grinders Built Plain or Universal

No. 249

Cincinnati Milling Machine Co., Cincinnati, recently announced a new cutter grinder embodying new features of convenience, accuracy and rigidity. The machine, as shown in the accompanying illustration, has a heavily ribbed box-type bed with a three-point support on the floor. It has a fixed height table and a fixed operating position for all types of cutter grinding. A new feature is the mounting of the table on antifriction roller bearing supports. The table slide rides on two long roller chains guided by four ball bearings, two on each end. Accurate cross adjustment up to 10 inches is obtainable by use of the handwheel at the left front side. Means for this same adjustment are duplicated at the rear of the machine. Two fixed narrow guide inverted-V bearings support the saddle.



No. 249 — Cutter grinder with fixed height table and fixed operating position for all types of cutter grinding. Furnished in either plain or universal design

Table Swivel Is Provided

The table proper can be swiveled and has a graduated swivel dial reading taper in inches per foot. A fine handwheel movement which is desirable for cylindrical grinding and surface grinding is obtained by engaging the knurled knob at the center of the circular box at the right side of the machine, and then giving movement to the table by turning the crank. The knob provides a means for locking the table against end movement when setting up a job. Overall dimensions of the table are 5¼ inches by 36 inches and the movement in line with the centers is 18 inches. Work 10 inches in diameter can be swung between centers. Length of work held between ends of the table is 27 inches while work 21½ inches long can be handled with the right hand tailstock and the regular headstock.

The grinding wheel spindle head is mounted on one end of an adjustable column having both vertical and horizontal movements. Drive for this head is obtained from a special ½-horsepower motor, operating at a speed of 3425 revolutions per minute, and mounted at the lower end of the column. Motor shaft and spindle are parallel and the drive is made through a simple straight belt. A new large workhead which receives the shanks of end mills and face mills, holding them for sharpening just as they are held in the nose of the milling machine, also is provided. The head itself swivels in vertical and horizontal planes.

The machines are marketed as plain and universal cutter grinders. The universal machine consists of the plain machine with a cylindrical grinding attachment, surface grinding attachment, gear sharpening attachment and an internal grinding attachment. The universal machines only are supplied with a motor driven workhead. Four grinding wheels, one on each of the regular straight, straight cup, flaring cup and dish type are furnished with the plain machine while the universal machine is supplied with these and one additional straight wheel and one wheel for the internal grinding attachment.

High-Frequency Motor in Portable Sander

No. 250

Porter-Cable Machine Co., Syracuse, N. Y., is manufacturing a high-frequency portable sander suitable for all types of light sanding and polishing work on both wood and metal parts. The motor used in the sander has a frequency of 180 cycles, giving a maximum speed of 10,800 revolutions per minute. This is considered a safe speed for ball bearings and rotating parts and a rotor of given size develops three times as much power as is obtainable from a frequency of 60 cycles. The rotor cannot burn out and has no commutator or brushes. Horsepower rating of the motor is 1½, producing a belt speed of 1800 feet per minute, which is maintained practically constant under extreme loads. The worm gear on the drive of the sander is hardened and ground to withstand the higher speed.

High Speed Gives Smooth Finish

As the abrasive belt works in a straight line and at high speed, it leaves no cross scratches and secures a finish equal to a ground surface. A belt also can be used on slightly curved surfaces because of its flexibility. Versatility in work is obtained merely by changing the abrasive belt. Net weight of the sander is 21 pounds.

Direct-Current Starters for Small Motors

No. 251

Cutler-Hammer Inc., 161 Twelfth street, Milwaukee, announces a new counter E. M. F. automatic starter for small direct-current motors in general applications. The starter incorporates a number of new features including small size, reduced starting voltage, thermal overload protection, low voltage protection and renewable silver contacts. It is rated up to 2 horsepower, 115 or 230 volts. Contactors are designed especially for direct-current service. Each starter is supplied with a separate pushbutton master switch providing three-wire remote control. Two-wire control can be furnished if desired.

The starters consist of a main line contactor, an accelerating contactor, an armature resistor, and the thermal

overload relays. On depressing the "start" button of the master switch, the main line contactor connects the motor to the line through the armature resistor. As the motor accelerates to the proper point, the counter E. M. F. (electromagnetic force) of the motor armature closes the accelerating contactor which cuts out the armature resistor, connecting the motor across the line. The standard starter is supplied with thermal overload relays, but starters without the relays are available also. Overload relays are of the fusible alloy type and can be made applicable to various size motors by changing the heater coils.

Barrel and Keg Stapling Machine Developed

No. 252

E. H. Titchener & Co., Walnut street, Binghamton, N. Y., has developed a stapling machine for stapling heads in barrels and kegs. By operating the lever of the machine, as shown in the accompanying illustration, nail-pointed square-top staples may be driven quickly through the wood or steel hoop on the barrel and into the head. The machine can be used on a 9-inch keg or a 19-inch barrel without adjustment. Barrels of larger diameter can be accommodated by fitting the device with a special long rest—the lower bar shown in the illustration.

No. 252—Barrel stapling machine

Effects Saving in Labor

The stapler is said to effect considerable labor saving over the old hand method of nailing; it also insures all nails entering the head since the driver can be adjusted permanently to inject staples in the correct level relative to the top of the head. Head liners are not needed. The entire machine consists of only 15 parts exclusive of bolts and screws, and only two moving parts, the operating lever and the driver.

The staple used is of 11-gage steel wire with flat top and nail points. Inside dimensions are ¾-inch wide by 1 inch long. An unusual method is used for loading the staples into the stapler. Staples are cemented together in blocks of 25 pieces. Four of these blocks can be loaded into the machine at a time. The staples are fed into operation automatically, a full load of staples in the machine being sufficient for stapling heads in 25 barrels or 50 kegs.

Grinder Transmission Is V-Disk Type

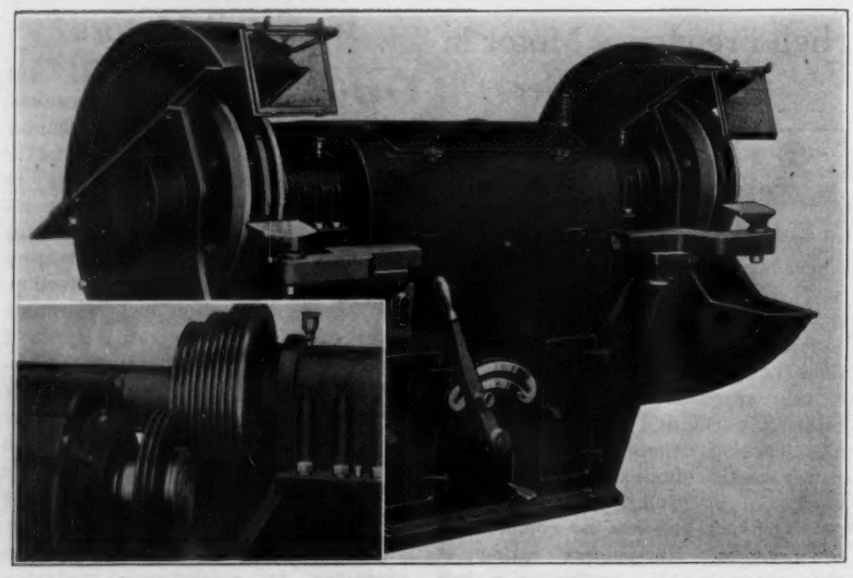
No. 253

United States Electrical Tool Co., Cincinnati, recently has placed on the market a new type of grinder for high-speed snagging work, operating on alternating current and employing a new method of power transmission known as the V-disk transmission. The transmission, shown in the inset in the accompanying illustration, consists of a series of meshing disks on the motor shaft and spindle, the disks being made of graphitized micarta, a material similar to that used in automobile timing gears.

Novel Speed Adjustments

A feature of the grinder is its ability to maintain an average peripheral speed or wheel surface speed of approximately 9000 feet per minute, using vitrified or high-speed wheels down to the flanges. This is accomplished by proper manipulation of the transmission. For example, on the grinder that takes a 24-inch wheel, the wheel surface speed is 9500 feet per minute. When worn down to 21 inches, the speed is 8500 feet per minute. Then the spindle speed is increased to give 9500 wheel surface feet per minute. By the time the wheel is worn down to 18 inches, it is turning 8300 surface feet per minute. At this point the spindle speed is increased a second time, giving approximately 9700 wheel surface feet per minute. These two changes of spindle speed during the life of the wheel are accomplished easily by means of the foot pedal and hand lever shown in the illustration. This operation lifts the metal transmission disks attached to the motor spindle and replaces them into the smaller disks on the wheel spindle. The hand lever is interlocked with the guards making it impossible to run the wheels at excessive rates of speed.

Four heavy-duty ball bearings in dustproof housings, pushbutton control with no voltage release and overload protection, unbreakable glass eye shields, adjustable tool rests, and wheel guards of the adjustable type with exhaust connections are other features of construction.



No. 253—New alternating-current high-speed grinder, inset showing V-disk power transmission

Editorials

Fabricators Make Excellent Record

IN RETROSPECT the seventh annual convention of the American Institute of Steel Construction presents an impression of sound accomplishment in many directions.

The telegrams of congratulation received from President Hoover and from dozens of foreign organizations demonstrated the recognition in high places which the work of the institute has won. The optimism and confidence of the members of the institute, as expressed in their message to the President, revealed the substantial condition of business within the industry, which in a large measure is the result of constructive activities of the institute. The committee reports, papers and discussions afforded a panorama of the swiftly moving action of the organization in solving the problems of engineering, merchandising, business practice and education.

But towering above these notable manifestations were two acts which are prophetic of important work to be done by the institute in the next few years. One was the adoption of a code of trade practice, which was characterized by Commissioner Humphrey as one of the best documents of its kind proposed by any industrial group. When it becomes effective, it should prove a strong influence in the promotion of fair business practice.

The second significant development, while less tangible, nevertheless was noticeable throughout the convention. It was the undercurrent of sentiment favoring more attention to esthetics in the design of steel structures. It reflects a growing realization that beauty in design is a factor in merchandising structural steel.

Officers, members and staff of the institute are to be congratulated on its uninterrupted record of important achievements. They insure gratifying future development of the structural steel industry.

Melters Should Have Working Tools

OPEN-HEARTH melters no longer will have to work their heats of steel according to judgment and guesswork once ways and means are devised for perfecting mechanical control apparatus. Steelmaking costs can be reduced materially and a better grade of steel obtained by mechanically regulating the amount of air required for combustion of the fuel.

A fan driven by a variable-speed motor and a mechanically operated damper in the stack afford one means of supplying metered air in the proper proportion and of effecting balanced conditions within the furnace. Moreover, operations are improved materially. The reduced amount of fuel and air means a decrease in the volume of waste gases, which in turn reduces the scoring action of the products of combustion in the outgoing section of the furnace and prolongs the melting campaign.

Combustion is dependent upon the air and fuel supply and draft conditions and can be controlled by the installation of such instruments as an air meter indicator or recorder, a draft gage, a pyrometer for the flue or stack temperature, an indicating thermometer for the hot air, a carbon dioxide recorder and other standard equipment.

Once the use of these instruments is understood by the furnace crew, the control formerly vested in the human element gives way to a more accurate guide for the melter. While local conditions may prevent the installation of such devices, yet the steelmaking industry in general is in need of automatic equipment for the uniform control of open-hearth furnaces and will benefit by its installation.

Nothing Wrong with Building

IN 37 states east of the Rocky Mountains, building construction contracts awarded in October showed a value increase from September of $240,000, September totaling $445,402,300 and October $445,642,300. While it is true that the October figure was 25 per cent below that of October, 1928, it also is true that more buildings are contemplated or actually projected than a year ago.

In New York, Philadelphia, Chicago, Detroit, Cleveland and other important centers, enough subways, bridge, apartment house, hotel, clubhouse and industrial plant construction is pending to presage a large steel consumption within the next few months. While some will be postponed until spring, the placing of the steel must necessarily take place earlier to assure delivery. According to F. W. Dodge Corp. compilations, new contemplated projects in October reached a total

of $801,806,300, 73 per cent over September and 30 per cent over last October.

While the recent financial flareup may temporarily hold up some of this, the general feeling is that little or none of it will be permanently out of the picture. In fact, many leaders in the steel fabricating industry believe the exact opposite will prevail.

According to IRON TRADE REVIEW'S weekly compilations of structural steel awards, 1,918,214 tons of shapes was awarded in 46 weeks of this year, against 1,776,733 tons in the same period of 1928. The weekly average so far in 1929 is 41,700 tons, compared with 39,082 tons for all 1928.

The year bids fair to be a record-breaking one in steel thus consumed. Fabricating shops are busy, some on a 90 to 100 per cent basis, with enough work on hand to keep them that way for three or four months. Nothing is wrong with the structural shape producing or fabricating end of the steel industry and those engaged in it look ahead to almost uninterrupted activity for several months.

Small Steady Gains Make Efficiency

MANY a mickle makes a muckle, some canny Scot remarked, and its truth is reflected in advanced efficiency of railroads in handling vastly increased traffic. No longer do consumers of material meet delay in its transport from producers' plants to their own, but can rely on quick service and regular schedules. This has reduced necessity for carrying heavy inventory and has saved large sums in overhead charges.

Reports by the bureau of railway economics from time to time chronicle the improvement in speed of freight movement, usually expressed in fractional percentages. At first glance these gains seem infinitesimal and of little account. Perhaps each one, taken alone, means little.

The report for September, as an instance, shows that the average speed of freight trains was 13.1 miles per hour, which is the highest for any September on record and 0.4 mile above that for September last year. Daily average movement per freight car in September was 34.3 miles, also the highest September record and 1.7 miles above the same month in 1928. Average load per car in September was 27.1 tons, an increase of 0.4 ton over September 1928, but the same as for September 1927.

Yet, in spite of the fractional increase of one year over the preceding, the present efficient state results from the aggregate of these slight gains, year after year, the fractions and small integers adding to larger figures that really mean much in rapid and reliable carriage of goods.

What Our Readers Are Thinking

When Billions Fall Like Leaves

WITHIN the space of 96 hours, during the end of October, the stock market crashed to the extent of $25,000,000,000. This is almost as much money as the World war cost the people of the United States. It is equal to eight times the cost of the Civil war. It is more money than many European nations believe there is in the entire world. In sheer magnitude it eclipses any decline in the history of Man.

Anywhere else, cabinets would have fallen, parliaments would have been shattered, moratoriums declared and millions left paralyzed with doubt and fear. Yet the soundness and solidarity with which this country has taken this blow is enough to stir the imagination of the entire civilized world.

Americans have often been called a "money people." Those who believed this must be stunned at the way we stood the shock. Those who said that under our golden fleece was a fiber made flabby by luxuries must wonder at the quiet courage with which we have tightened our belts and turned our faces to the days ahead. Despite all of the morals which are properly pointed, one feels a justifiable bit of pride as he surveys the stamina with which we have come through the hurricane.

Billions were lost. But thousands of men have discovered that wealth will not come without effort, brawn, muscle, brain and production. Investment, not speculation, will once again become the keynote of our financial structure.

Billions were lost. But thousands of men will turn once more to their work, their careers, to the farm, the mine, the mill and the factory, where a people rears its wealth.

And in the meantime, what of the country, of business, of the prosperity which is ours? For the real answer, thinking men will turn from the inflated figures of exaggerated values and exaggerated losses, to the sober figures of Industry. They will look at production, carloadings, crop movements, and wages. They will behold a purchasing power greater than any ever known to history and they will see that it is unimpaired. They will compare the national income with what it was a year ago and not find more than a fraction of difference.

Billions have been wiped out but not a single grain of wheat has been destroyed. The wheels of Industry spin with the same symphony of progress and growth which we have heard these many years. Those who think in terms of gloom and panic will feel it. Those who look out on a nation, working, buying, selling, building and rearing the greatest experiment ever known to Man, will feel an even firmer faith in their country and their countrymen.

A year from today men will point to what happened and say: "It was an ordeal but it saved us all." In the meantime those who listen, hear the voice which cries out:

"Watchman, what of the night?"

And they hear the answer too, which rings clear and true,

"The morning cometh."

The Shaft,
Edgar T. Ward's Sons. Co.
November, 1929.

IRON TRADE REVIEW

Volume 85, Number 21 — Published Every Thursday

E. L. SHANER, Editor. — *J. D. PEASE, Advertising Director.* — *F. F. LIGHT, Circulation Manager.*

Demonstrating the welding of a battleship-deck floor at Biloxi, Miss. Page 1307.

"F. o. b. Pittsburgh" Is New Department

A NEW seamless tube mill being built at McKeesport, Pa., is costing $20,000,000, *one of the items in a list of plant expansions and improvements in the Pittsburgh district running well over* $50,000,000, *recently completed or now underway. Of the billion and a half dollar annual industrial output in Allegheny county, including Pittsburgh, 74 per cent represents metals and metal products. Steel manufacturers are making fuller use of river transportation; coal lands are passing to new hands. These are the highlights of some of the features published under the caption "F.o.b. Pittsburgh" beginning on page* 1347 *of this issue. "F.o.b. Pittsburgh" will be a regular department in* IRON TRADE REVIEW, *similar to "Steel Angles from Chicago," and "Mirrors of Motordom," all brimful of interesting and informative news.*

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IRON TRADE REVIEW is published by the Penton Publishing Co., Cleveland, O. Member, Audit Bureau of Circulation; Associated Business Papers Inc. and National Publishers Association. Branch offices: 1347 Peoples Gas Bldg., Chicago; 505 Bell Block, Cincinnati; 2203-2206 No. 220 Broadway, New York; 2148-49 Oliver Bldg., Pittsburgh; 1703-11 Claus Spreckel Bldg., San Francisco; 1653 Pennsylvania avenue, Washington; and Boston. Foreign offices: Caxton House, Westminster S. W. 1, London; 9 Rue de Londres, Paris, France; Dahlmerstrasse 64A Berlin Lichterfeld-West, Germany; cable address: *PENTON*, Cleveland; *IROTRAPEN*, London. Terms: Subscription in United States, Cuba and Mexico, $6 per year; in Canada, $8.50 per year and in Great Britain and other countries £2:0:0 per year. *Entered ta the Postoffice at Cleveland as Second Class Matter, Copyright 1929 by the Penton Publishing Co.*

The Business Trend

Constructive Factors Appear

By JOHN W. HILL, Financial Editor

FURTHER severe stock market liquidation last week was followed by some recovery later. Meanwhile, a number of constructive factors and developments have made their appearence with the result that business sentiment, though still unmistakably unsettled, shows some improvement. While industrial activities in various important lines are receding, the feeling is gaining ground that no extended depresson is at hand.

AMONG the favorable recent events have been the announcement of government measures designed to stimulate trade, evidence of the best railroad purchases in five years, report of gains in machine tool buying and cotton consumption, and a large expansion of the country's building.

IN ADDITION, sharp curtailment in the automobile industry is reported in an effort to correct the condition of excessive stocks. This is having a direct effect upon producers of automobile steel and other materials for motor car manufacture, with the result that their operations have sagged to low levels.

HOWEVER, the drastic remedy the automobile industry is applying should result in a reasonably prompt cure of its ailment. December may mark the low point in this readjustment with gradual resumption of activities in the early months of 1930. Partly offsetting the slump in automobile demand is the heavy railroad buying. October freight cars orders of nearly 20,000 were the largest since 1924.

GOVERNMENT measures aimed at helping the financial and industrial situation include the federal reserve board policy of easing money rates, the treasury's announcement that lower income taxes are in order, and President Hoover's plans for an economic conference.

THE report of October building construction is interesting in that it shows an increase over September. However, the total continues below that of one year ago. The record of new contemplated construction as reported by the F. W. Dodge Corp. shows a total of $801,000,000 an increase of 73 per cent over September and of 30 per cent over October, 1928.

The Barometer of Business

INDUSTRIAL INDICATORS

	Oct., 1929	One month ago	One year ago	Average 1913
Pig iron output (Daily average, tons)	115,747	116,098	108,000	83,900
Machine tool index	287	265	250	62.8
Unfilled orders (tons)	4,086,562	3,900,000	3,351,000	4,513,000
Ingot output (Daily average, tons)	167,089	180,434	172,144	.....
Dodge Bldg., awards in 37 states (sq. ft.)	65,609,000	59,870,000	87,000,000	.....
Automobile output	400,000	417,000	429,000	.....
Coal output, tons	51,600,000	44,480,000	50,000,000	39,869,000
Business failures; number	1,822	1,568	2,023	1,336
Business failures; liabilities	$31,313,581	$34,124,731	$34,990,474	$22,732,000
Cement production, Bbls.	16,731,000	17,223,000	17,533,000	7,704,000
Cotton consumption, bales	640,000	545,649	618,788	438,218
Car loadings (weekly average)	1,170,000	1,134,000	1,175,000	.....

FOREIGN TRADE

	Oct., 1929	One month ago	One year ago	Average 1913
Exports	$530,014,000	$442,000,000	$555,000,000	$194,000,000
Imports	$392,000,000	$351,000,000	$357,000,000	$149,900,000
Gold exports	$ 3,805,000	$ 1,205,000	$ 990,000	$ 5,234,060
Gold imports	$ 21,321,000	$ 18,781,000	$ 14,310,000	$ 5,900,000

FOREIGN EXCHANGE

	Normal	Nov. 21	One month ago	One year ago
Sterling	$4.86	$4.87	$4.85	$4.84⅝
Francs	19.3c	3.93c	3.92c	3.90 7/16c
Lira	5.26c	5.23c	5.23c	5.23 1/16c
Marks	23.8c	23.91c	23.86c	23.81½c

FINANCIAL INDICATORS

	Oct., 1929	One month ago	One year ago	1913
25 Industrial stocks*	$261.88	$415.10	$313.48	$58.19
25 Rail stocks*	$119.52	$144.20	$129.42	$82.90
40 Bonds*	$84.40	$87.60	$91.07	$93.00
Bank clearings (000 omitted)	$78,207,086	$59,102,084	$57,687,162	$13,895,000
Commercial paper rate N. Y., (per cent	5¾	6¼	5½	5½
Commercial loans (000 omitted)**	$9,743,000	$9,582,000	$9,179,306	.....
Federal Reserve ratio, per cent	70	74	67.4	.....
Railroad earnings†	$133,898,000	$141,000,000	$134,000,000	$59,301,000
Stock sales, N. Y. stock exchange	141,668,410	100,056,120	98,831,435	6,924,000
Bond sales, par value	$347,225,000	$212,252,000	$231,259,000	$41,499,000

*Nov. 21.

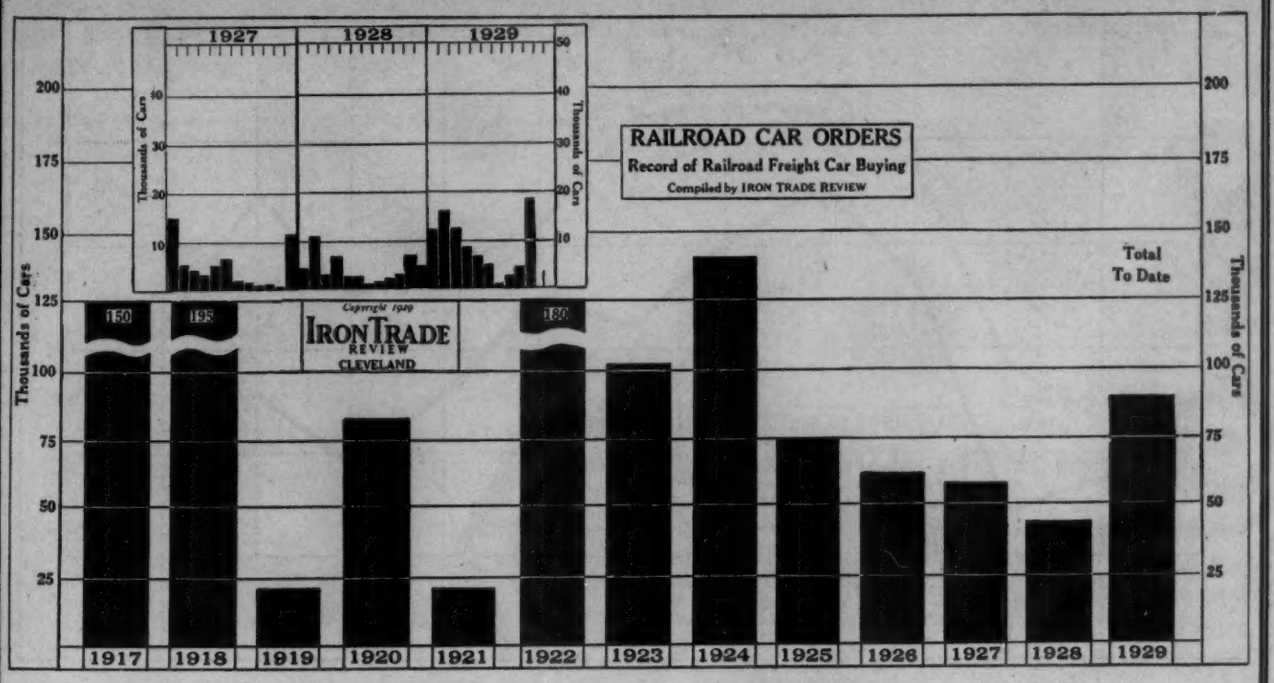
**Leading member banks Federal Reserve System.

†Sept., 1929.

COMMODITY PRICES

	Nov. 1	One month ago	One year ago	1913
IRON TRADE REVIEW composite average of 14 iron and steel prices	$36.23	$36.50	$35.93	$26.32
Bradstreet's index	134	136.9	139	100
Wheat, cash (bushel)	$1.23	$1.26	$1.06	92c
Corn, cash (bushel)	87c	96c	84c	51c
Petroleum, crude (Bbl.)	$1.30	$1.30	$3.60	$2.50

The Business Trend

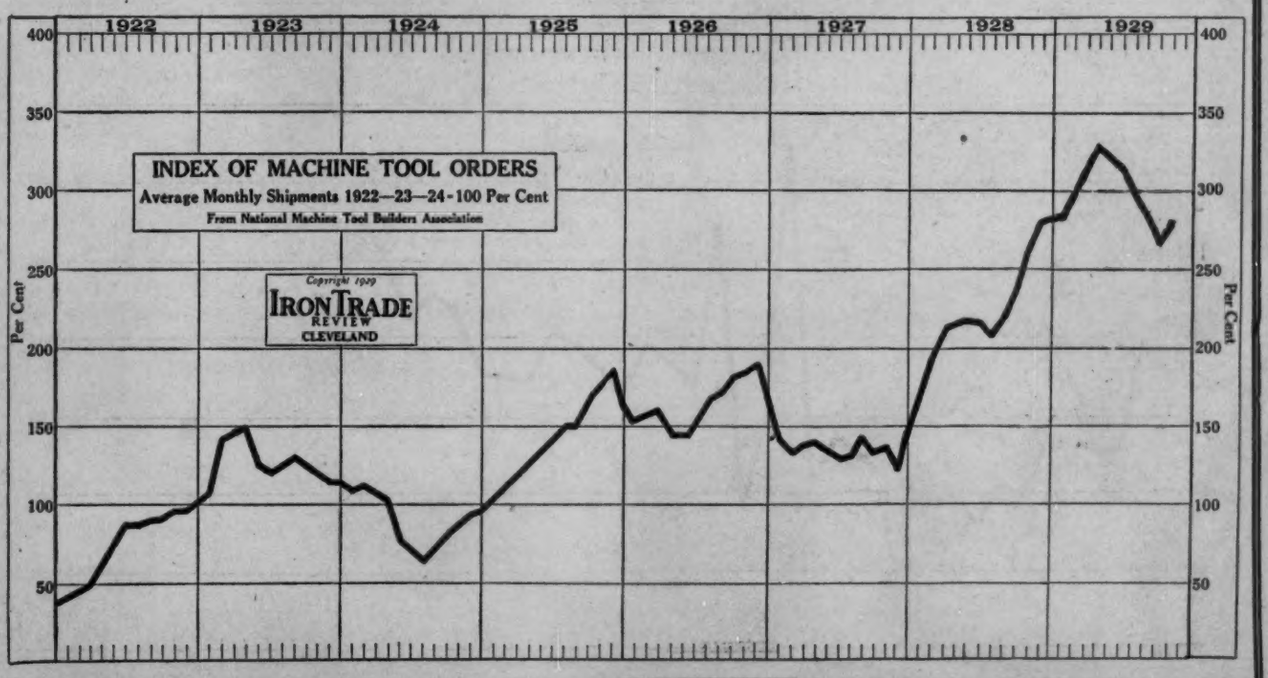


Railroad Car Orders

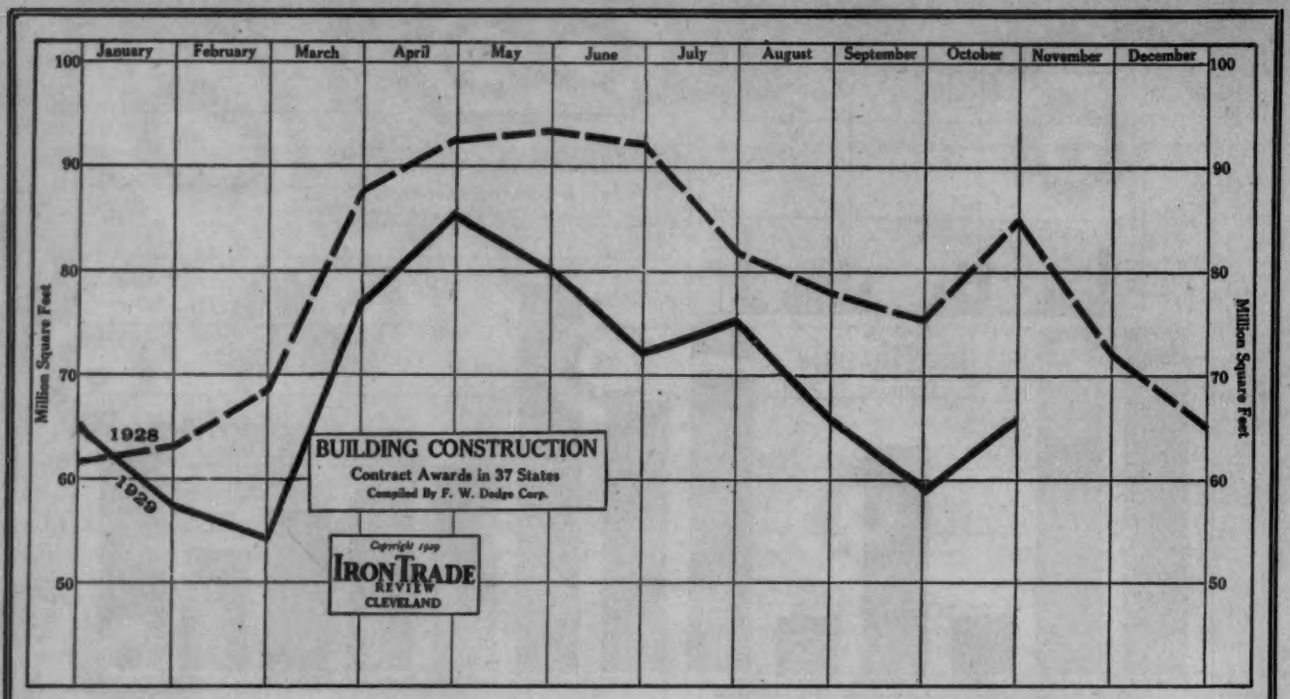
DURING the first ten months of 1929 railroads purchased approximately 90,000 new freight cars. This compared with 44,763 in all of 1928, 63,300 in all of 1927. For the full year railroad buying seems almost certain to exceed 100,000 cars and the largest total for any year since 1924, when 125,931 cars were purchased. October with orders of 19,500 cars constituted the largest monthly total of any month since September, 1924. This figure compared with 4517 cars in September, and 2853 in October, 1928.

Machine Tool Index

DURING October the machine tool index reversed its downward trend and turned upward. The three months moving average as compiled by the National Machine Tool Builders' association stood at 287 for August, September and October compared with 265 for July, August and September. The increase resulted from a sharp gain in October business, which stood at an index of 322 compared with 241 in September. October orders were not far below the year's peak in April.



The Business Trend

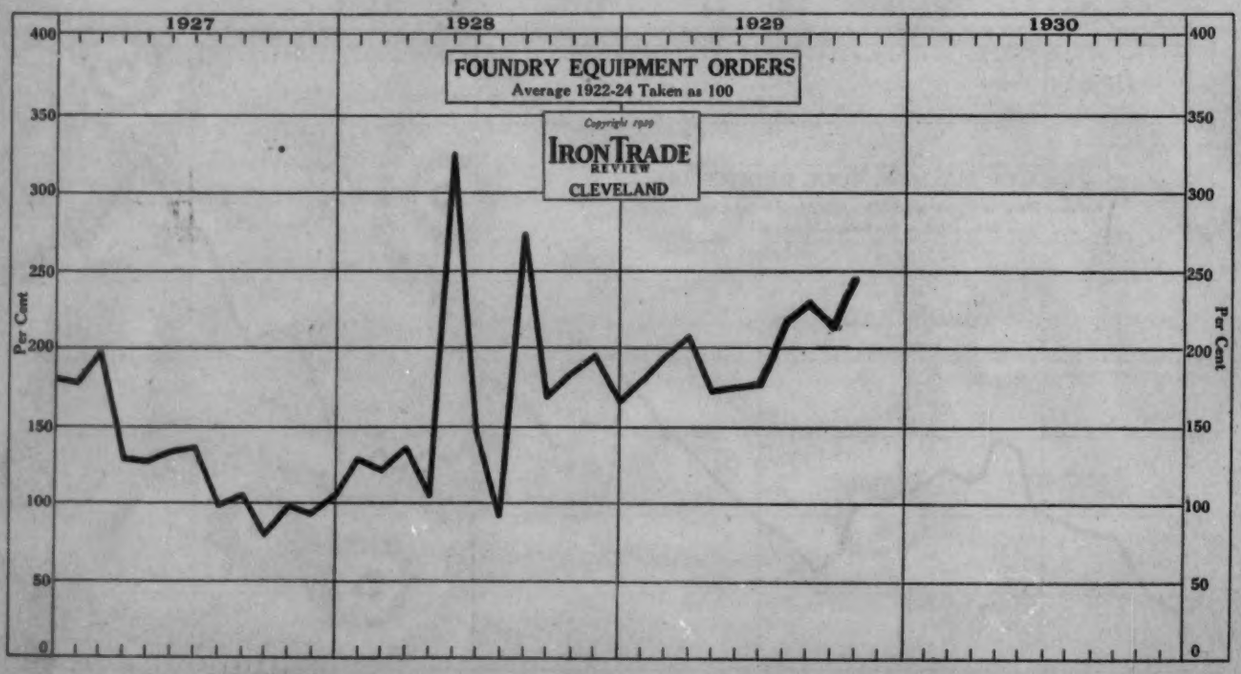


Building Construction

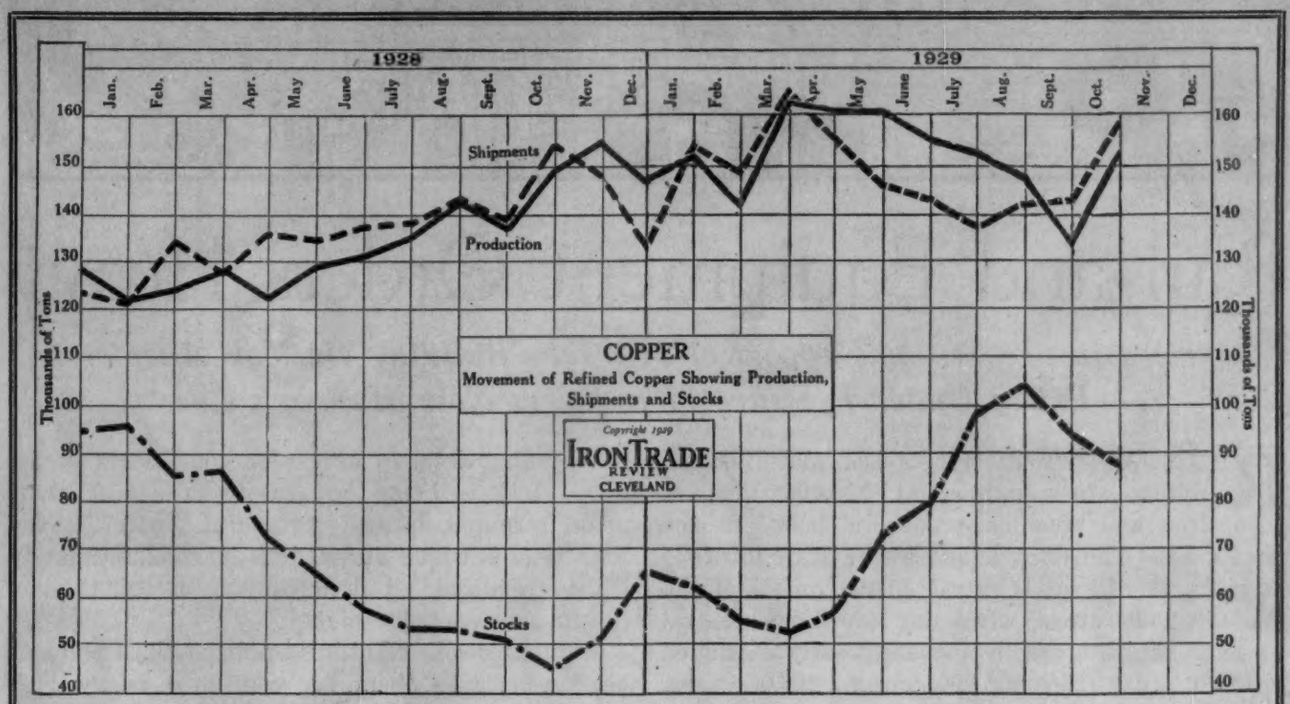
BUILDING construction in October turned upward after a general declining tendency since last spring. Total contract awards in 37 states reported by the F. W. Dodge Corp. were 65,609,200 square feet, compared with 59,872,200 square feet in September. The increase over the previous month was 10 per cent. Compared with October, 1928, however, a decline of 23 per cent was shown. Industrial and residential building in October gained over September and declined from October, 1928.

Foundry Equipment

OCTOBER provided the largest volume of gross orders to members of the Foundry Equipment Manufacturers' association for any month since August, 1928. Taking average monthly shipments for 1922, 1923, 1924 as 100, October orders reported by 20 companies stood at an index of 245.3. This compares with 216.3 in September and 185 in October, 1928. Previous peak month in 1929 was August, when 20 companies reported an index of gross orders of 229.5.



The Business Trend

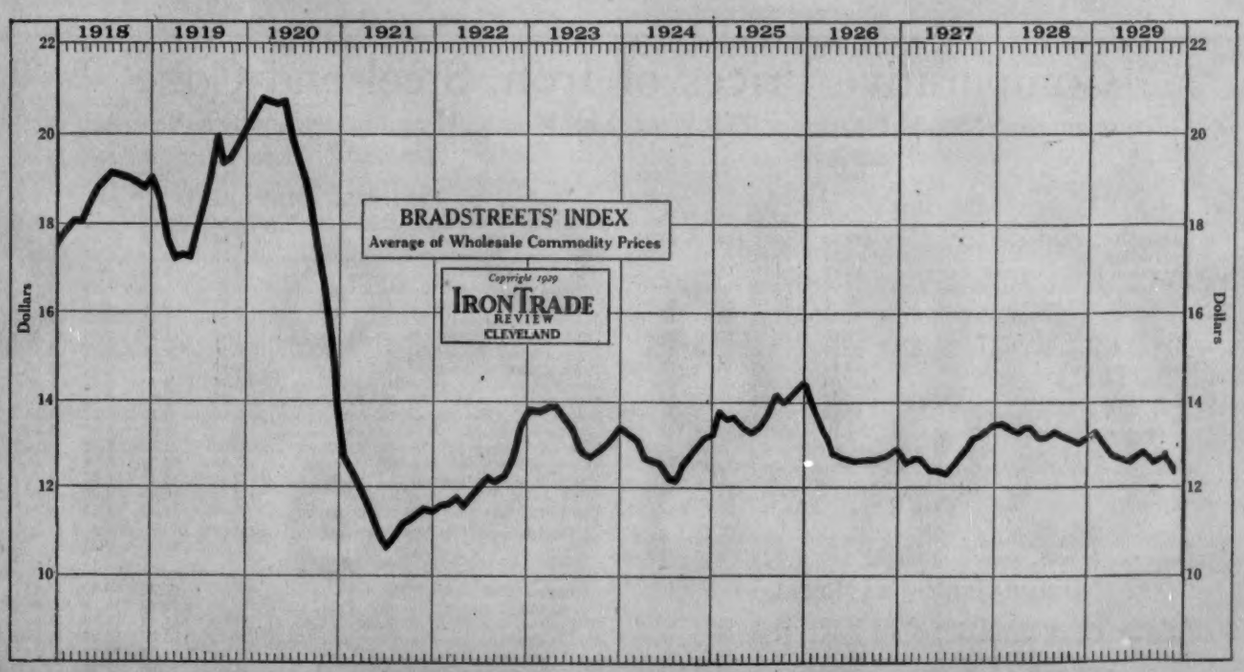


Refined Copper

STOCKS of refined copper in hands of producers in North and South America were cut during October to the lowest levels since June of this year. As of Nov. 1 stocks totaled 88,401 tons, a decline of 6350 tons from the preceding months and comparing with the year's peak of 104,372 at the end of August. Shipments of 159,190 tons showed a sharp increase over the total of 143,964 tons in September. In October, 1928, shipments were 155,363 tons. Production in October was 152,814 tons.

Bradstreets' Prices

THE general level of wholesale prices of commodities as indicated by Bradstreet's index number moved downward during October. Declines were noted for all but one group of prices, that of fruit. Notable declines were noted for textiles, metals, hides and leather. Bradstreet's index number of Nov. 1 showed a decrease of 2.3 per cent from the previous month and 4.3 per cent from January. Compared with one year ago the index was 4.6 per cent lower. It is 40 per cent lower than the postwar peak.



Rail and Equipment Orders Heavy

Carriers Insure Strong Support of Market—Building Outlook Auspicious —Prices Under Pressure—Producers Now at Year's Low

RAILROAD purchases of track material and rolling stock put about 225,000 tons of iron and steel on producers' books in the past week. The Rock Island awarded 57,100 tons of rails, the Illinois Central 40,000 tons and the Wabash 23,000 tons, while the New York Central by exercising its option unusually early expanded its 1930 order from 206,000 tons to 265,000 tons.

13,700 Freight Cars on Inquiry

Many eastern carriers are about to place track accessories, the New York Central closing on its requirements Nov. 26. About 1075 freight cars were ordered in the past week, with fresh inquiry for 950, making 13,700 freight cars pending. This is exclusive of 5000 contemplated by the Chesapeake & Ohio, 2000 by the Virginian and an unstated number by the Louisville & Nashville. For 1929 to date 92,000 freight cars have been closed, more than double all 1928 and topping any entire year since 1924.

Twenty-nine large locomotives were bought in the past week, while new inquiry for 16 maintains the pending total in excess of 400. First structural steel is being bought for the Cincinnati union terminal, largest structural project in the country, for which 40,000 tons of steel ultimately will be required. Railroad buying of bridge steel continues seasonally high.

With railroad executives assuring the President he can look to them for continued heavy purchases, there is no doubt that the railroads will be a large and steadying factor in iron and steel activity at least through the first half of 1930. At the moment, construction of the 28,000 cars placed since midyear is tempering the seasonal downtrend in iron and steel production.

Believe Damage Has Been Localized

As the stock market crash recedes into history the immediate damage to iron and steel appears localized in the automotive industry, and there is a growing conviction that the repercussion in general business will largely spend itself in the fourth quarter. Excepting automotive consumers, and in isolated instances these have developed

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Nov. 20, 1929	Oct. 1929	Aug. 1929	Nov. 1928
PIG IRON				
Bessemer, del. Pittsburgh	$20.76	20.76	20.76	19.96
Basic, valley	18.50	18.50	18.50	17.70
Basic, eastern, del. eastern Pa.	19.75	19.75	19.85	19.75
No. 2 foundry, del. Pittsburgh	19.76	19.76	19.76	19.56
No. 2 foundry, Chicago	20.00	20.00	20.00	20.00
*Southern No. 2, Birmingham	14.00	14.00	14.00	16.38
**No. 2X, Virginia furnace	18.25	19.65	20.00	20.50
**No. 2X, Eastern del. Philadelphia	22.26	22.26	22.26	21.51
Malleable, valley	19.00	19.00	19.00	17.90
Malleable, Chicago	20.00	20.00	20.00	20.00
Lake Superior, charcoal, del. Chicago	27.04	27.04	27.04	27.04
†Gray forge, del. Pittsburgh	19.13	19.13	19.13	18.66
Ferromanganese, del. Pittsburgh	109.79	109.79	109.79	109.79

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.
†Now based on Pitts. dist. fur. price; formerly on Valley base.

COKE				
Connellsville furnace, ovens	2.65	2.65	2.75	2.85
Connellsville foundry, ovens	3.50	3.75	3.75	3.75
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	35.00	35.00	35.00	33.60
Sheet bars, open-hearth, Pittsburgh	35.00	35.00	35.00	33.60
Billets, open-hearth, Pittsburgh	35.00	35.00	35.00	33.00
Wire rods, Pittsburgh	40.00	40.00	42.00	42.00

	Nov. 20, 1929	Oct. 1929	Aug. 1929	Nov. 1928
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.90	1.90	1.95	1.95
Steel bars, Chicago	2.00	2.05	2.05	2.00
Steel bars, Philadelphia	2.22	2.22	2.27	2.27
Iron bars, Chicago	2.00	2.05	2.05	2.00
Shapes, Pittsburgh	1.90	1.95	1.95	1.95
Shapes, Philadelphia	2.01	2.01	2.06	2.11
Shapes, Chicago	2.00	2.05	2.05	2.00
Tank plates, Pittsburgh	1.90	1.95	1.95	1.95
Tank plates, Philadelphia	2.10	2.05	2.15	2.15
Tank plates, Chicago	2.00	2.05	2.05	2.00
Sheets, black, No. 24, Pittsburgh	2.75	2.80	2.85	2.80
*Sheets, blue anl., No. 13, Pittsburgh	2.35	2.35	2.35	2.05
Sheets, gal., No. 24, Pittsburgh	3.40	3.50	3.55	3.55
Sheets, black, No. 24, Chicago	3.00	3.05	3.10	3.00
*Sheets, blue anl., No. 13, Chicago	2.50	2.50	2.50	2.15
Sheets, galvanized, No. 24, Chicago	3.65	3.70	3.80	3.65
Plain wire, Pittsburgh	2.40	2.40	2.50	2.40
Wire nails, Pittsburgh	2.40	2.45	2.60	2.55
Tin plate, per base box, Pittsburgh	5.35	5.35	5.35	5.30

*Comparison for November, 1928, is with old blue annealed base, No. 10.

SCRAP				
Heavy melting steel, Pittsburgh	16.00	17.30	18.90	17.35
Heavy melting steel, eastern Pa.	15.00	15.80	16.75	15.90
Heavy melting steel, Chicago	13.00	14.45	15.05	14.50
No. 1 wrought, eastern Pa.	16.25	16.00	16.25	15.50
No. 1 wrought, Chicago	13.50	14.85	15.40	14.25
Rails for rolling, Chicago	15.00	17.05	17.75	16.50

Current Prices for Rolled Steel Products

STEEL PLATES

Pittsburgh, base	1.90c to 1.95c
Philadelphia, del	2.10c to 2.15c
New York, del.	2.175c to 2.225c
Boston, del.	2.265c to 2.415c
Chicago, base	2.00c to 2.05c
Cleveland, delivered	2.14c
Lackawanna, N. Y., base	2.05c to 2.15c
Birmingham, base	2.10c
Coatesville, Pa., base	2.00c to 2.05c
Pacific Coast, c.i.f.	2.35c
St. Louis, del.	2.27c
Detroit, del.	2.19c to 2.24c

STRUCTURAL SHAPES

Pittsburgh, base	1.90c to 1.95c
Philadelphia, del.	1.96c to 2.01c
New York, del.	2.145c to 2.195c
Boston, del.	2.265c to 2.415c
Chicago, base	2.00c to 2.05c
Cleveland, delivered	2.09c to 2.14c
Lackawanna, N. Y.	2.05c to 2.15c
Birmingham, base	2.10c
Bethlehem, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c
Detroit, del.	2.19c

BARS

SOFT STEEL

Pittsburgh, base	1.90c
Chicago, base	2.00c to 2.05c
Birmingham, base	2.10c
Lackawanna, N. Y., base	2.00c to 2.05c
Pacific Coast, c.i.f.	2.35c
Cleveland, base, local mills	1.90c
Cleveland, del., outside mills	1.95c
Philadelphia, del.	2.22c
New York, delivered	2.24c to 2.29c
Boston, delivered	2.265c to 2.415c
Detroit, del.	2.07c to 2.19c
Pittsburgh, cold finishing	2.05c
Pittsburgh, forging quality	2.15c

RAIL STEEL

Chicago Heights	1.90c to 1.95c
Eastern mills	1.85c to 1.95c

IRON

Chicago, base	2.00c to 2.10c
New York, delivered	2.19c to 2.24c
Philadelphia, delivered	2.17c to 2.22c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet, cut lengths	2.20c
Stock lengths from mill	1.95c
Chicago, billet	2.00c to 2.10c
Chicago, rail steel	1.85c to 2.00c
Chicago, rail steel, road and bridge work	1.95c to 2.05c
Philadelphia, cut lengths	2.52c to 2.62c

STAINLESS STEEL OR IRON
Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets.....35.00c; plates.....31.00c; bars.....28.00c

16½-18½ per cent chrome, no nickel

Sheets.....32.00c; plates.....25.00c; bars.....25.00c

12½-14½ per cent chrome, no nickel

Sheets.....27.00c; plates.....20.00c; bars.....20.00c

13¼-14½ per cent chrome, 0.30-0.40 carbon

Bars 37.00c

16½-18 per cent chrome, 0.58-0.68 carbon

Bars 35.00c

SHEETS

SHEET MILL BLACK, No. 24

Pittsburgh, base	2.75c
Philadelphia, delivered	3.17c
Gary, Indiana Harbor	2.85c
Chicago, delivered	2.90c
Birmingham, base	3.00c
St. Louis, del.	3.27c

TIN MILL BLACK, No. 28

Pittsburgh, base	2.90c to 3.00c
Gary, base	3.00c to 3.10c

GALVANIZED, NO. 24

Pittsburgh, base	3.40c to 3.50c
Philadelphia, delivered	3.72c to 3.82c
Gary, Indiana Harbor	3.60c
Chicago, delivered	3.65c
Birmingham, base	3.65c
St. Louis, del.	3.92c

BLUE ANNEALED
Sheets, No. 13

Pittsburgh, base	2.25c to 2.35c
Chicago, district mills	2.45c
Chicago, delivered	2.50c
St. Louis, delivered	2.67c
Philadelphia, delivered	2.67c
Birmingham	2.50c

Plates, No. 9 and 10

Pittsburgh, base	2.10c to 2.20c
Chicago district mills	2.30c
Chicago, delivered	2.35c
Philadelphia, delivered	2.52c
St. Louis, delivered	2.67c
Birmingham	2.35c

AUTOMOBILE, NO. 20

Pittsburgh, base	4.00c
Detroit, delivered	4.29c

FURNITURE

Pittsburgh	4.10c to 4.20c

(Turn to the following page)

slight improvement, major outlets for iron and steel display little more than year-end lethargy.

Structural steel fabricators enter the winter season the best fortified in their history. Jobs closed in the past week include 12,500 tons of subway work in New York and 6800 tons for the new Ford assembly plant at Edgewater, N. J. Farm implement manufacturers, on the whole, are as active as a year ago and some tractor plants have expanded their schedules. Pipe, both steel and iron, is in a period when commitments normally are light. Scattering automotive releases for pig iron and finished steel indicate slight expansion of assembly in December, chiefly for January show purposes, but a definite turn for the better is not yet at hand. Ford and Chevrolet are issuing some releases for their new models.

November Is Equal to October

Tin plate specifications being received for January shipment augur well. In the Pittsburgh district some sheet producers have slightly accelerated their production, due chiefly to orders from car builders. Many bar and plate mills, excepting those heavily dependent upon the automotive industry, have bookings thus far in November which equal the comparable period of October, but there is frank acknowledgment that with inventory-season approaching this condition may change. An extremely spotty price situation prevails. Pig iron is generally unchanged, but quotations will be put to a severe test when volume buying for the first quarter begins. By-product coke and some beehive coke prices are being carried over into the first quarter. Iron and steel scrap prices continue to slide. Sheet bars are off $1 per ton. Cast pipe has softened $1 per ton at New York, while concrete bars are off $2 per ton at Pittsburgh and sheets $2 per ton at Chicago. Weakness in blue annealed and galvanized sheets at Pittsburgh is more pronounced. Tin plate and wire products' prices have been reaffirmed, and it seems probable this action will also be taken in regard to heavy finished steel.

Lake shipments of iron ore are almost over, with 4,500,000 tons the probable November total.

Production Is Being Curtailed

Producers are paralleling restrained buying with curtailed operations. Two merchant blast furnaces have been taken off in the Valley district, while two may be dropped shortly at Buffalo. Steelmaking at Youngstown, O., at about 40 per cent, is the lowest in over a year. Only 19 of 51 independent open-hearth furnaces and 46 out of 120 independent sheet mills are on this week. Buffalo operations are down to 63 per cent, while Pittsburgh holds at 70-75 and Chicago at 75.

Composite Market Average

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

Last week (November 20, 1929)	$35.97
Last week (November 13, 1929)	36.09
One month ago (October, 1929)	36.23
Three months ago (August, 1929)	36.54
One year ago (November, 1928)	36.02
Ten years ago (November, 1919)	51.28
Fifteen years ago (November, 1914)	23.39

After being stationary three weeks the IRON TRADE REVIEW composite of 14 leading iron and steel products declined 12 cents last week, reflecting chiefly weakness in sheets. This index at $35.97 is lowest in just a year.

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

Tubular Products Quoted On Last Editorial Page—See Preceding Page For Other Products

HOOPS, BANDS, STRIPS

Hot strip, to 6-in., Pitts	2.00c
Hot strip 6-1/8 to 24-in., Pitts	1.90c
Do, delivered Detroit	2.09c to 2.19c
Hot strip, bands 6 in. and under, Chicago	2.10c
Do, 6-1/8 to 23-1/4	2.00c
Cooperage stock, Pittsburgh	2.20c
Do, Chicago	2.30c
Cold rolled strip, hard coils, 16 inches and under by 0.100-inch and heavier, base Pitts., Cleve, (3 ton and over)	2.75c
Worcester, Mass. (3 tons and over)	2.90c to 3.00c

ALLOY STEEL

Hot Rolled
F.o.b. Mills
Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differential	Net 100 lb.bars
2000	0.25	$2.90
2100	0.55	3.20
2300	1.50	4.15
2500	2.25	4.90
3100	0.55	3.20
3200	1.35	4.00
3300	3.80	6.45
3400	3.20	5.85
4100 0.15-0.25 Mo.	0.50	3.15
4100 0.25-0.40 Mo.	0.70	3.35
4600 0.20-0.30 Mo. 1.25-1.75 Ni.	1.05	3.70
5100 0.60-0.90 Cr.	0.35	3.00
5100 0.80-1.10 Cr.	0.45	3.10
6100 Chrome Spring	0.20	2.85
6100 Bars	1.20	3.85
6100 Spring Steel	0.95	3.60
Chrome Nickel Vanadium	1.50	4.15
Carbon Vanadium	0.95	3.60
9250 (flats)	0.25	2.90
9250 (rounds, squares)	0.50	3.15

Hot rolled alloy billets 4 x 4-inch and over take same price per gross ton as same specification alloys bars per net ton. Sizes under 4 x 4 to 2½ in. x 2½ in. inclusive sold on bar basis plus steel bar card extras for size. Sizes under 2½ in. x 2½ in. take bar price on net ton basis.

COLD FINISHED STEEL

Bars, drawn or rolled, Pitts., Chi., Buffalo, and Cleve. c.l.	2.20c
Do, delivered, Detroit	2.435c
Shafting (turned, polished) Pittsburgh, Buffalo	2.20c
Shafting (turned, ground) mill (Depending on size, 1 3/16 to 7-inch)	2.55c to 3.00c

WIRE PRODUCTS

F.o.b. Pittsburgh, Cleveland, Ironton base

(Per Pound)

Bright plain wire, 6 to 9 gage	2.40c

	Trade	Large Jobbers
Annealed wire	2.65c	2.55c
Galvanized wire	3.10c	3.00c
Barbed wire, galvanized	3.15c	3.05c

(Per 100-pound keg)

Wire nails	$2.50	$2.40
Galvanized nails	4.50	4.40
Polished staples	2.95	2.85
Galvanized staples	3.20	3.10
Cement coated nails	2.50	2.40
Wire, delivered Detroit		2.57c
Nails, delivered Detroit	$2.57 to 2.72	

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Pittsburgh-Cleveland-Ironton base on products made there; Duluth $2 higher; Worcester, Mass., Fairfield, Ala., $3 higher.

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

Anderson, Ind., $1 higher. Chicago $2 higher, Duluth, Birmingham $3 higher.

CUT NAILS, CHAIN, PILING

Cut nails, c.l., f.o.b. mills	2.70c to 2.75c
Cut nails, l.c.l. f.o.b. mills	2.80c to 2.85c
Sheet piling, base, Pittsburgh	2.20c

Chain proof BB and BBB, Pitts.

3/16-in. to ½-in.	33 1/3 and 5 off
9/16-in. to 1½-in.	33 1/3 off

CAST IRON WATER PIPE

Class B Pipe—Per Net Ton

Six-inch and over, Birming'm	$37.00 to 38.00
Four-inch, Birmingham	41.00 to 42.00
Four-inch, Chicago	49.20 to 50.20
Six-inch to 24-inch, Chicago	45.20 to 46.20
Six-inch and over, New York	36.50 to 38.50
Four-inch, New York	40.00 to 41.00
Standard fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

TIN PLATE; TERNE PLATE

Prices per 100-pound box Pittsburgh

*Tin plate, coke base	$5.35

Gary, Ind., base 10 cents higher.

Long ternes, primes, No. 24—	4.00c to 4.10c

*Price subject to quantity differentials.

WASHERS

Wrought, c.l., Pitts. dist.	$6.50 to 6.75 off
Wrought, c.l., Chicago dist.	$6.702 to 26.90 off
Lock: to dealers	35-5 off
Lock: to consumers	35 off

RAILS, TRACK MATERIAL

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 29.00
Light rails, 25 to 45, mills	$36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7/16-inch and smaller, Pitts.	2.80c
Spikes, boat and barge, Pitts.	3.00c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts., steam roads	3.80c
Track bolts, Pitts., stand. jobbers	70 off list
Track bolts, Chicago	3.80c
Tie plates, Chicago, Pitts.	$43.00

BOLTS AND NUTS

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, apply to lists of April 1, 1927. Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread	60 to 70 off
Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.	
Eagle list	60 to 70 off

MACHINE BOLTS

All sizes, cut thread	60 to 70 off
Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.	
Lag screws	60 to 70 off
Plow bolts, Nos. 1-2-3-7 heads	60 to 70 off
Tap bolts	60 to 70 off
Blank bolts	60 to 70 off
Stud bolts without nuts	60 to 70 off
Stove bolts, 75, 20 10 and 5 off in pkgs., 75, 10, 10 and 5 with 2½ off in bulk.	
Tire bolts	60-5 off

Nuts

Semifinished	60 to 70 off

HEXAGON CAP SCREWS

Milled	80-10-5 off
Upset 1 in. diam. and smaller	5 off

SQUARE HEAD SET SCREWS

Milled	80-5 off
Upset 1 in. diam. and smaller	80-10-5 off

RIVETS

Struc., c.l., Pitts.-Cleve.	3.10c
Structural, c.l. Chicago	3.20c
**7/16-inch and smaller, Pitts.	70 and 10 off
Chi., Cleve.	70 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Raw Materials and Semifinished Products

SEMIFINISHED STEEL

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$35.00
Pittsburgh, bessemer	35.00
Youngstown	35.00
Cleveland	35.00
Philadelphia	40.30
Chicago	37.00
Forging, Chicago	42.00
Forging, Pittsburgh	40.00
Forging, Philadelphia	45.30

SHEET BARS

Pittsburgh	$34.00 to 35.00
Youngstown	34.00 to 35.00
Cleveland	34.00 to 35.00
Chicago	37.00

SLABS

Pitts., Young.	$35.00
Cleveland	35.00

WIRE RODS

Pittsburgh, Cleveland	$40.00
Chicago	43.00
Youngstown	40.00 to 42.00

SKELP

All grades, Pittsburgh	1.90c

IRON ORE

LAKE SUPERIOR ORE

Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½%	$4.80
Mesabi bessemer, 51½%	4.65
Old range nonbessemer, 51½%	4.65
Mesabi nonbessemer, 51½%	4.50
High phosphorus, 51½%	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%	9.00 to 10.00
Copper-free low phos. 58-65%	nominal

FOREIGN ORE

Cents per units, alongside docks

Atlantic ports

Foreign manganiferous ore, 45-55% iron, 10-12% manganese	12.00 to 12.50
North African low phosphorus	12.50
Swedish basic, 65%	10.50
Swedish low phosphorus	12.00
Spanish and North African basic, 50 to 60 per cent	11.50 to 12.00
Newfoundland foundry, 55%	nominal
Tungsten future, short ton unit, duty paid	15.25 to 15.50

MANGANESE ORE

Prices, not including duty, are cents per unit.

Brazilian (47-48 per cent)	30 to 32 cents
Indian	30 to 34 cents
Caucasian, (50-55 per cent)	32 to 34 cents

FLUORSPAR

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, import duty paid east, tide., gross ton	$21.00

REFRACTORIES

FIRE CLAY BRICK

Per 1000 f.o.b. works

First Quality

Pennsylvania	$43.00 to 46.00
Ohio	43.00 to 46.00
Illinois	43.00 to 46.00
Kentucky	43.00 to 46.00
Missouri	43.00 to 46.00
Maryland	43.00 to 46.00
Georgia and Alabama	40.00 to 45.00

Second Quality

Pennsylvania	35.00 to 38.00
Ohio	35.00 to 38.00
Illinois	35.00 to 38.00
Kentucky	35.00 to 38.00
Missouri	35.00 to 38.00
Maryland	35.00 to 38.00
Georgia and Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham	50.00 to 51.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	65.00

MAGNESITE

Net Ton Chester, Pa., and Baltimore base

Dead-burned grain magnesite	40.00

CHROME BRICK

Net Ton Chester, Pa., and Baltimore base

9 x 4½ x 2½	45.00

Pig Iron

Shipments Exceeding New Orders—Additional Furnaces Out, Checking Increase in Stocks—Prices Are Steady

NEW orders for pig iron continue light, with the majority of melters under contract for the remainder of the year, and consumption tending to diminish. Shipments are well sustained, and in some districts indicate further purchasing will be necessary before the close of the year. Two additional valley stacks have been withdrawn from the active list; a mishap to a Birmingham stack caused it to be blown out, and two Buffalo units probably will be withdrawn by the close of the year. Production is being kept down to shipping requirements. Southern furnaces report having large unfilled orders for the remainder of the year. Barge shipments from Buffalo east have been suspended for the season. Inquiries for first quarter increased during the week in East.

PITTSBURGH, Nov. 19.—New pig iron business is light, but the statistical position of the market has improved. Additional furnaces have withdrawn from production, enabling producers to keep closer balance between output and shipments. Stocks are showing little if any increase, and for some interests have been moderately reduced so far this month. With further decrease in production stocks are expected to be at a low level by the end of the year. Shipments are considerably ahead of incoming business, and the well sustained movement indicates resumption of buying may be necessary by the first of the year. The Davison Coke & Iron Co. has banked its Sharpsville furnace, and the Youngstown Sheet & Tube Co. has blown out its Hubbard stack. The Shenango Furnace Co. shut down one Sharpsville furnace a week ago. New buying is mainly for immediate needs and in small lots, with no interest shown in future requirements. Prices lack the test of large tonnages, but are quotably unchanged at $18.50, valley, for No. 2 foundry and basic, and $19 for bessemer and malleable, with prices named by the local furnace here 50 cents higher.

Boston, Nov. 19.—Pig iron sales during the past week totaled 2500 to 3000 tons. Mystic Iron Works booking 1300 tons. Dealers report limited interest on the part of buyers. Prices are unchanged.

New York, Nov. 19.—While trading continues sluggish, inquiry for pig iron for first quarter is slightly more active. About 3000 to 4000 tons was placed within the past week, while new inquiry probably aggregates 6000 tons. Prices are unchanged at $17.50 to $18, base, Buffalo. A leading inquiry involves 1000 tons for Worthington Pump & Machinery Corp., Harrison, N. J. New York Air Brake Co. is inquiring for 600 to 650 tons for Watertown, N. Y. An eastern railroad equipment builder is inquiring for 300 tons of foundry iron, Brooklyn navy yard for 200 tons of low phosphorus iron, and Newport News Shipbuilding & Dry Dock Co. for one car of high silicon foundry iron. A Boston consumer has closed on 300 to 400 tons of foundry iron, a portion going to a Buffalo furnace. Buffalo makers are reported to be placing some iron in stock in New Jersey in contemplation of the closing of the barge canal for the winter.

Buffalo, Nov. 19.—New inquiry for pig iron totals 2500 to 3000 tons, the largest volume in more than six weeks. Producers are trying to establish $18, base, furnace, as their minimum in the East, but there are persistent reports that one seller will do $17.50 on preferred tonnage. There is a strong probability that 2 of the 14 blast furnaces now in operation here will be withdrawn from production by Jan. 1. This would be the first curtailment since last winter. Shipments by barge canal took considerable iron from Buffalo furnaces during the last week of clearances.

Cleveland, Nov. 19.—Pig iron sales are slackening considerably, totaling this week 7700 tons by furnaces with headquarters here, compared with 8700 tons last week and 10,600 tons two weeks ago. Most sales are small. Three lots, of about 500 tons each, have been sold for first quarter delivery at the current market. A few automotive foundries in Michigan are releasing iron, forecasting slight improvement in the automotive industry next month. One furnace interest which has been comparatively quiescent for some months is again active. The report of a large sale of pig iron for water shipment to the Chicago district is believed to refer to a sale to a Chicago broker or to a water shipment to Milwaukee. Some believe the price situation will be put to a test when volume buying for first quarter starts. Malleable and No. 2 foundry are $19, base, Cleveland furnace, for local delivery.

Cincinnati, Nov. 19.—Spot orders for carload lots made up the bulk of 2300 tons of pig iron sold in this district during the past week. No interest has developed in first quarter requirements, dealers report, and some carryover may be the result of heavy buying of southern iron while lower prices were in effect. Shipments have receded slightly from the rate of one month ago.

St. Louis, Nov. 19.—New buying of pig iron in this district continues light but shipments show a daily average only slightly below that of October, and a shade heavier than a year ago. A moderate reduction in the melt is seasonal in character. Southern furnace books have not been opened officially for first quarter. The leading local producer is quoting present prices for that period. Sales reported during the week totaled slightly under 3000 tons.

(*Concluded on Page* 1345)

Pig Iron Prices

Per Gross Ton

Bessemer, valley furnace	$19.00
Bessemer, del. Pittsburgh	20.76
Basic, valley furnace	18.50
Basic, Pitts., dist. fur	19.00
*Basic, del., Pitts	19.63 to 20.13
Basic del., eastern Pa	19.75 to 20.25
Basic, Buffalo furnace	18.50
Basic, del., eastern Pa.	19.85 to 20.76
Malleable, valley furnace	19.00
Malleable, Pitts., dist. fur	19.50
*Malleable, del. Pittsburgh	20.13 to 20.63
Malleable, Cleve. fur. for local del.	19.00
Malleable, Chicago furnace	20.00
Malleable, Buffalo furnace	20.00
Malleable, del. eastern Pa	21.76 to 22.90
Malleable, Granite City fur.	20.00
No. 1 foundry, Chicago furnace	20.50
No. 1X, Eastern del., Phila	22.76
No. 1X, Buffalo furnace	21.00
No. 2 foundry valley furnace	18.50
No. 2 fdy., Pitts. dist. fur	19.00
*No. 2 foundry, del. Pittsburgh	19.63 to 20.13
No. 2 plain, Buffalo furnace	19.50
No. 2 foundry, Chicago furnace	20.00
No. 2 fdy., Cleve. fur. for local del.	19.00
No. 2 fdy., Granite City	20.00
No. 2 plain, del., Phila	21.76
No. 2 plain, Virginia furnace	17.75
No. 2 plain, Buffalo, del. Boston	21.28 to 21.91
No. 2 plain, N. J., tidewater	20.78 to 21.78
No, 2 Alabama, Bir. base	14.00 to 14.50
No. 2 Tenn., Birmingham base	14.00 to 14.50
No. 2 Tenn., del. Cincinnati	17.69 to 18.19
No. 2 Alabama, del. Cincinnati	17.69 to 18.19
No. 2 Alabama, del., Cleveland	20.51 to 21.01
No. 2 Alabama, del. Chicago	19.01 to 20.01
No. 2 Alabama, del. St. Louis	18.42 to 18.92
No. 2, Ala., Phila., dock dely.	19.25 to 19.75
No. 2 Ala., Balt., dock dely	19.00 to 19.50
No. 2 Ala., N. Y., dock dely	19.00 to 19.50
No. 2 Ala., Boston, dock dely	20.75
No. 2X, east., N. J., tidewater	21.28 to 22.28
No. 2X, eastern, del. Phila	22.26
No. 2X, foundry, Buffalo furnace	20.00
No. 2X, Buffalo, del. Boston	22.28 to 22.78
No. 2X, Virginia furnace	18.25
Gray forge, Pitts. dist. fur.	18.50
*Gray forge, del. Pittsburg	19.13 to 19.63
Low phos., standard, valley	27.00
Low phos., standard, Phila.	24.76
Low phos., copper bearing fur.	23.00 to 24.00
Charcoal, Superior, del., Chicago	27.04

*Freight from Pittsburgh district furnace to points in Pittsburgh district 63c, 76c and $1.13 per ton.

CANADIAN PRICES

No. 1 foundry, del. Toronto	$23.60
No. 1 foundry, del. Montreal	25.00
No. 2 foundry, del. Toronto	23.10
No. 2 foundry, del. Montreal	24.50
Malleable, del. Toronto	23.60
Malleable, del. Montreal	25.00
Basic, del. Montreal	23.50

Silvery iron Jackson county, O., furnaces in per cents: 5—$22; 6—$23; 7—$24; 8—$25; 9—$26; 10—$28. 11—$30; 12—$32; 13—$34.

Bessemer ferrosilicon, Jackson county, O., furnaces, in per cents: 10—$30; 11—$32; 12—$34; 13—$36; 14—$38; 15—$41; 16—$43.50; 17—$46.50.

Coke

Market Is Quieter—Merchant Beehive Output Lowest in Six Weeks—Prices Being Reaffirmed

PRODUCTION of coke in the Connellsville district continues to decline. Demand for heating coke generally is below seasonal expectations, while foundries and furnaces are consuming considerably less than a few weeks ago. Sellers of special grades of beehive foundry coke have opened books for first half at unchanged prices. Contracting for by-product coke underway in some districts.

Pittsburgh, Nov. 19.—Declining requirements for furnace and foundry grades of beehive coke are further dulling market activity. Spot demand is extremely light, and blast furnaces are showing little interest in contracts for future needs. Producers continue to quote $2.65 to $2.75 for furnace coke. Shipments against old orders are fair, but are decreasing. Foundry operations are slower and coke demand from this source is off correspondingly. There is a surplus in heating coke, reflected in decreased production. Output from merchant ovens now is the lowest in six weeks.

Position of coke in the Connellsville region for the week ended Nov. 9 was 53,230 tons, compared with 56,670 tons the preceding week and 63,970 tons in the same period a year ago, according to the *Connellsville Courier*.

Boston, Nov. 19.—Demand for domestic coke has increased, but the situation in foundry coke remains unchanged. A fairly good tonnage is moving, for immediate needs. Prices are unchanged.

New York, Nov. 19.—Sellers of special grades of beehive foundry coke have opened books for first half at the unchanged price of $4.85, Connellsville. Contracting for by-product coke is well under way, with prices holding at $9 to $9.40, delivered Newark, N. J.; $11, delivered New England; and $9, delivered Philadelphia. With a few large consumers in this district, the market on beehive furnace coke continues $2.75 to $3, Connellsville, although trading has not been up to expectations.

Cincinnati, Nov. 19.—Specifications for by-product coke from jobbing foundries in this district continue normal, but demand from other consumers is dull. Prices are steady.

St. Louis, Nov. 19.—Shipments of metallurgical coke are holding up well. Aside from the malleable shops and a few specialty plants, there have been no requests for holdups. By-product interests are operating at, or close to capacity, and moving out all but a small part of their current production. Prices are steady.

Birmingham, Ala., Nov. 19.—Production and shipment of coke continue active, independent producers moving their output steadily. Iron and steel manufacturers have a little surplus coke, and one or two are offering a little of their product in the open market. By-product foundry coke continues $5, base, Birmingham.

Coke Prices

Prices per Net Ton

Beehive Ovens	
Connellsville furnace	$2.65 to 2.75
Connellsville foundry	3.50 to 4.85
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25
By-Product Foundry	
Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England del.	11.00
St. Louis del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ov., Connell. basis	6.50
Portsmouth, O. ov., Connell. basis	6.50
Buffalo ovens	8.75
Detroit ovens	9.00
Philadelphia, del.	9.00

Ferroalloys

New Spiegeleisen Contracts Booked at Unchanged Prices

Pittsburgh, Nov. 19.—Spiegeleisen contracts for the first half of 1930 are being taken at prices unchanged from current quotation of $34 for small lots. Differentials prevail on larger tonnages. Consumers are in no hurry to contract, but a fair number of the larger buyers have signed. Books have not been opened on ferromanganese. The current price continues $109.79, delivered Pittsburgh. Spot business is light. Shipments against contracts show a further decline, and now are slightly below the rate a year ago. Aggregate shipments for the entire year, however, give indications of setting a new high record. Special ferroalloys are unchanged but less active.

New York, Nov. 19.—Domestic spiegeleisen in carload lots, 19 to 21 per cent, is moving rather sluggishly at $34, furnace, with some business in English spiegeleisen, 22 to 24 per cent, at the same figure, duty paid. Reflecting easier operating schedules at the mills, ferromanganese specifications are coming out in lesser volume. The market continues $105, duty paid.

Special ferroalloys are unchanged in prices but shipments are lighter. Contract prices for next year have not been announced. Tungsten is holding steady, despite slow demand, as there is no indication of increased offerings for some time. An interesting event of the past week was the return of W. F. Carman from China with the news that his company, the China Commercial Co., will continue as an important factor in the Chinese wolframite market. Rumor in the past few months was to the contrary. Wolframite and imported scheelite are $15.25 to $15.50 a short ton unit, and domestic scheelite $16.50 to $16.75.

Bolts, Nuts, Rivets

Demand Holding Well—Railroad Needs Will Be Heavy

NUT AND BOLT PRICES, PAGE 1330

Pittsburgh, Nov. 19.—Bolts, nuts and rivets are slower, consumers adjusting purchases more closely to immediate needs. Business still compares favorably with the volume of a year ago. Specifications are well distributed among consuming lines. Books have not been opened for first quarter, but no change is expected from current prices of 60 to 70 off for bolts and nuts and 3.10c, Pittsburgh, for large rivets.

New York, Nov. 19.—New York Central's next year's requirements of spikes and bolts will probably be 5 per cent greater than for this year, with bids to be opened Nov. 26. Several other eastern railroads including the Erie, and New York, New Haven & Hartford, are expected in the market shortly. The situation otherwise is dull with eastern producers falling behind in operations, now being under 60 per cent.

Cleveland, Nov. 19.—Nut, bolt and rivet manufacturers have reduced operations, the average now being under 65 per cent. Demand is further curtailed. Prices remain unchanged.

Chicago, Nov. 19.—Specifications for nuts and bolts show little change from the rate of the past six or eight weeks. Shipping orders are only slightly below a year ago. Carriage and machine bolts remain unchanged at 60 to 70 off list.

Ferroalloy Prices

(In dollars, except ferrochrome)

Ferromanganese, 78 to 82 per cent tidewater, duty paid	$105.00
Ferromanganese, del. Pittsburgh	109.79
Spiegeleisen, 19 to 21 per cent, domestic furnace, spot†	34.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do., less carload	88.50
Do., 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb. con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.45
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producer's plant, net ton	160.00
Do., one ton to carload	170.00
Ferrophosphorus, per ton, carload 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

†Carloads. Differentials apply to large quantities.

*These prices contract, spot $5 higher.

Scrap

Steady Decline Continues as Melters Fail to Buy—Weakness Affects all Grades

NO BOTTOM has appeared in iron and steel scrap and continued failure of consumers to cover has caused further decline. Contracts are not being renewed and shipments are being regulated by many melters. Most grades are losing at the rate of 25 cents to 50 cents a ton a week.

Chicago, Nov. 19.—Iron and steel scrap has failed to regain its footing and prices again have declined 25 to 50 cents. Heavy melting steel is off another 25 cents, folowing the sale of several thousand tons to a leading steelworks consumer at $13.50. The melting steel range now is $13 to $13.50. All leading consumers of melting steel have limited their daily carload shipments. One steelworks now is taking only about 30 per cent of this year's peak daily movement, while another has limited incoming tonnage to about 50 per cent of the average daily shipments of spring and early summer months. Much of the weakness apparently is due to depressed sentiment but decreased consumption by important consumers is a more potent factor. The softening affects rolling mill and cupola grades as well as basic open-hearth scrap, and even electric furnace scrap is being quoted at much lower levels. No. 1 cast classifications are about 50 cents lower. Successful bids for scrap offered by railroads are more in line with consumer market quotations than for some time.

Boston, Nov. 19.—The scrap market

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	10.50 to 13.50
Boston, dealers	9.75 to 10.00
Boston, No. 2	10.50 to 11.00
Buffalo, No. 1	14.50 to 15.50
Buffalo, No. 2	12.75 to 13.25
Chicago	13.00 to 13.50
Cincinnati, deal.	12.50 to 13.00
Cleveland, No. 1	14.25 to 14.75
Cleveland, No. 2	13.75 to 14.25
Detroit, No. 1 deal.	12.50 to 13.00
Detroit, No. 2 deal.	11.00 to 11.50
East Pa., del. mill	15.00 to 15.50
N. Y., deal. R. R.	11.50 to 11.85
N. Y., deal. yd.	8.00 to 8.25
Pittsburgh, No. 1	15.50 to 16.50
St. Louis, No. 1	13.00 to 13.50
Valleys, No. 1	15.50 to 16.50

COMPRESSED SHEETS

Buffalo (dealers)	12.75 to 13.25
Chicago	11.50 to 12.00
Cleveland	14.25 to 14.75
Detroit, dealers	12.25 to 12.50
E. Pa. new mat.	13.50 to 14.00
Pittsburgh	15.50 to 16.00
Valleys	16.00 to 16.50

BUNDLED SHEETS

Buffalo	9.50 to 10.00
Cincinnati, deal.	10.25 to 10.75
Cleveland	12.50 to 13.00
Eastern Pa.	11.50 to 12.00
Pittsburgh	14.50 to 15.00
St. Louis	9.00 to 9.50

SHEET CLIPPINGS LOOSE

Chicago	8.50 to 9.00
Cincinnati	8.50 to 9.00
Detroit, dealers	9.00 to 9.50
St. Louis	9.00 to 9.50

STEEL RAILS, SHORT

Birmingham	13.00 to 14.00
Boston	8.75 to 10.00
Buffalo	17.50 to 18.00
Chicago (3 feet)	15.75 to 16.25
Chicago, 2 ft. and under	17.50 to 18.00
Cincinnati, deal.	18.00 to 18.50
Detroit, dealers	17.00 to 17.50
Pittsburgh (3 ft.)	18.50 to 19.50
Pittsburgh, 2 feet and under	19.00 to 20.00
St. Louis	18.00 to 18.50

STOVE PLATE

Birmingham	11.00 to 12.00
Boston consumers	11.00 to 11.50
Buffalo	12.50 to 12.75
Chicago, net	10.50 to 11.00
Cinn., deal., net	8.75 to 9.25
Detroit, net, deal.	9.00 to 9.50
Eastern Pa.	11.50 to 12.00
N. Y., deal., mill.	7.75 to 8.00
St. Louis	12.00 to 12.50

COUPLERS, SPRINGS

Buffalo	17.00 to 17.50
Chicago	16.00 to 16.50
Eastern Pa.	20.50 to 21.00
Pittsburgh	20.00 to 20.50
St. Louis	15.00 to 15.50

ANGLE BARS—STEEL

Chicago	15.75 to 16.25
St. Louis	14.00 to 14.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	17.50 to 18.00
Cleve. billet and bloom crops	18.00 to 18.50
Eastern Pa.	21.00 to 22.00
Pitts. billet and bloom crops	22.00 to 22.50
Pitts. sheet bar crops	21.50 to 22.00

FROGS, SWITCHES, GUARDS

Chicago	13.50 to 14.00
St. Louis	14.00 to 14.50

SHOVELING STEEL

Chicago	13.00 to 13.50
Cleveland	11.50 to 12.00
St. Louis	13.00 to 13.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	10.00 to 11.00
Boston, dealers	10.00 to 10.50
Buffalo, No. 1	12.50 to 13.00
Buffalo, No. 2	15.00 to 15.50
Chicago, No. 1	13.50 to 14.00
Chicago, No. 2	13.00 to 13.50
Cincinnati, No. 2	12.50 to 13.00
Eastern Pa.	16.00 to 16.50
N. Y., No. 1 deal.	12.00 to 12.50
Pittsburgh, No. 2	16.00 to 16.50
St. Louis, No. 1	12.50 to 13.00
St. Louis, No. 2	13.00 to 13.50

SPECIFICATION PIPE

Boston	9.25 to 9.50
Eastern Pa.	14.00
New York, deal.	9.75

BUSHELING

Buffalo, No. 1	12.75 to 13.25
Chicago, No. 1	11.50 to 12.00
Cinn., No. 1 deal.	10.00 to 10.50
Cinn., No. 2	6.50 to 7.00
Cleveland, No. 1	13.75 to 14.25
Cleveland, No. 2	10.00 to 10.50
Detroit, No. 1 new deal.	11.00 to 11.50
St. Louis, No. 1	9.75 to 10.25
Valleys, new No. 1	15.00 to 15.50

MACHINE SHOP TURNINGS

Birmingham	6.00 to 7.00
Boston	6.00 to 6.25
Buffalo	8.50 to 9.00
Chicago	7.00 to 7.50
Cincinnati, deal.	8.00 to 8.50
Cleveland	10.00 to 10.25
Detroit	8.00 to 8.25
Eastern Pa.	11.00 to 11.50
New York, deal.	7.00 to 7.50
Pittsburgh	10.50 to 11.00
St. Louis	7.25 to 7.75
Valleys	12.00 to 12.50

MIXED BORINGS TURNINGS
For Blast furnace use

Boston, dealers	5.50 to 6.00
Buffalo	11.00 to 11.50
Cincinnati, deal.	8.25 to 9.25
Cleveland	10.25 to 10.75
Detroit, dealers	8.75 to 9.25
Eastern Pa.	11.00
New York, deal.	7.00 to 7.50
Pittsburgh	11.00 to 11.50

CAST IRON BORINGS

Birmingham, chem.	13.00 to 13.50
Birmingham, plain	6.00 to 7.00
Boston, chem.	9.00 to 9.50
Boston, dealers	6.75 to 7.00
Buffalo	11.00 to 11.50
Chicago	9.25 to 9.75
Cincinnati, deal.	8.75 to 9.25
Cleveland	10.25 to 10.75
Detroit, dealers	8.75 to 9.25
Eastern Pa.	11.50
Eastern Pa., chem.	14.50
New York, deal.	7.00 to 7.50
Pittsburgh	11.00 to 11.50
St. Louis	9.25 to 9.75

PIPE AND FLUES

Cincinnati, deal.	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	11.00 to 11.50
Chicago, net	11.75 to 12.25
Cincinnati	9.50 to 10.00
Eastern Pa.	12.00
New York, deal.	8.50 to 9.00
St. Louis	11.50 to 12.00

FORGE FLASHINGS

Boston, dealers	8.50 to 9.00
Buffalo	12.75 to 13.25
Cleve. over 10 in.	13.50 to 14.00
Detroit	12.00 to 12.50

FORGE SCRAP

Boston, dealers	8.50 to 9.00
Chicago	17.50 to 18.00
Eastern Pa.	13.50 to 14.00

ARCH BARS AND TRANSOMS

Chicago, net	17.50 to 18.00
St. Louis	19.50 to 20.00

Iron, Steel Works Scrap

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	14.00 to 14.50
Chicago steelworks	11.50 to 12.00
Cleveland	14.00 to 14.50
Eastern Pa.	15.00
Pittsburgh	15.50 to 16.00
St. Louis	10.00 to 10.50

STEEL CAR AXLES

Birmingham	17.00 to 17.50
Boston, ship point	16.00 to 16.50
Buffalo	17.50 to 18.00
Chicago	17.90 to 18.50
Eastern Pa.	21.00 to 22.00
Pittsburgh	21.00 to 22.00
St. Louis	18.50 to 19.00

SHAFTING

Boston, ship point	14.00 to 14.25
Chicago	16.80 to 17.35
Eastern Pa.	19.00 to 19.50
New York, deal.	14.00 to 14.50
St. Louis	17.50 to 18.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	11.00 to 12.00
Boston, iron	14.00 to 14.50
Buffalo, iron	12.50 to 13.00
Buffalo, steel	17.50 to 18.00
Chicago, iron	13.50 to 14.00
Chi., rolled steel	17.50 to 18.00
Cincinnati	12.50 to 13.00
N. Y., iron, deal.	11.50 to 12.00
Pittsburgh, iron	15.00 to 15.50
Pittsburgh, steel	20.00 to 20.50
St. Louis, iron	13.75 to 14.25
St. Louis, steel	16.50 to 17.00

NO. 1 CAST SCRAP

Birmingham, cup.	12.00 to 13.00
Buffalo	14.75 to 15.25
Boston, textile	14.00 to 14.50
Chicago, mach.	15.10 to 15.70
Chicago, railroad	14.00 to 14.55
Chicago, agri.	12.90 to 13.45
Cincinati, mach. cupolas, gross	18.25 to 18.75
Cleveland, cupola	15.75 to 16.25
Detroit, net, deal.	12.00 to 12.50
East Pa., cupola	16.00
N. Y. cup. deal.	12.00 to 12.50
N. Y., del. local foundries	17.00
Pittsburgh, cupola	15.00 to 16.00
San Fran., del.	13.50 to 14.00
Seattle	14.50 to 14.75
St. L. No. 1 mach.	14.50 to 15.00
St. Louis, No. 1	14.00 to 14.50

HEAVY CAST

Boston	10.50 to 11.00
Buffalo, breakable	10.50 to 11.00
Cleve., breakable	12.50 to 12.75
Detroit, auto, net dealers	12.00 to 13.00
Detroit, break. deal	9.50
Eastern Pa.	14.00 to 14.50
New York, deal.	10.50 to 11.00
Pittsburgh	11.00 to 12.00

MALLEABLE

Boston, railroad	18.50 to 19.00
Buffalo	17.50 to 18.50
Chicago, agri.	14.00 to 14.50
Chicago, railroad	15.75 to 16.25
Cinn., R. R. deal.	15.25 to 15.75
Cinn., agri., deal.	14.25 to 14.75
Cleveland, rail.	18.00 to 18.50
Detroit auto deal.	14.50 to 15.00
St. Louis, rail	14.00 to 14.50

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	13.50 to 14.50
Boston	11.00 to 11.50
Buffalo	14.00 to 14.50
Chicago	15.00 to 15.50
Eastern Pa.	16.50 to 17.00
New York	12.75 to 13.25
St. Louis	14.75 to 15.25

LOCOMOTIVE TIRES

Chicago, cut	17.50 to 18.00
St. Louis, No. 1	15.00 to 15.50

LOW PHOS. PUNCHINGS

Chicago	15.00 to 15.50
Pittsburgh	19.50 to 20.00

continues inactive and with little promise to do much better through the balance of the year. There were decreases in half a dozen items again this week. Steel axles, borings and turnings, forge flashings, heavy melting steel and rails were all easier.

New York, Nov. 19.—Reductions in cast scrap are the most marked changes in the dealer's buying market. These reductions were about 50 cents a ton. While there has been some buying of stove plate by a Harrisburg, Pa., consumer few of these reductions found source in fresh consuming orders.

Philadelphia, Nov. 19.—Except a large tonnage recently bought by Bethlehem Steel Co., most purchases are small and moderate lots. This is accompanied by a downward movement in prices. Dealers do not trust the market and are shipping against contracts as rapidly as possible.

Buffalo, Nov. 19.—Bethlehem is reported to have purchased a small quantity of No. 1 heavy melting steel direct from a producer at $14.50, delivered Lackawanna. This reduces the value of No. 2 steel there to $13. The whole market has softened with announcement of this transaction and most materials have eased about 50 cents a ton.

Pittsburgh, Nov. 19.—Scrap prices are off further and mill and dealer buying is at a minimum. All mills but one are holding up shipments on the few contracts now current. Dealers lack new business against which to buy. Steelmaking and blast furnace grades are lower with heavy melting steel nominal at $15.50 to $16.

Cleveland, Nov. 19.—The iron and steel scrap market here is at almost a complete standstill. Lack of buying by both mills and dealers leaves quotations unchanged and nominal.

Cincinnati, Nov. 19.—Heavy melting steel declined 25 cents to a range of $12.50 to $13, when a decided slackening in demand became apparent the past week. Bundled sheets dropped 50 cents to $10.25 to $10.75. A weaker tone developed on reports that some important melters are not renewing contracts.

St. Louis, Nov. 19.—Under slack buying conditions the market for iron and steel scrap continues to slump. A number of important items touched new lows on the present downward movement, and generally the list was weak. Among items reduced were steel angle bars, iron and steel axles, arch bars, iron car wheels, cast grades, country mixed scrap, rails for rolling and miscellaneous rails and No. 1 railroad wrought. Cuts ranged from 25 cents to $1.25 per ton.

Birmingham, Ala., Nov. 19.—Heavy melting steel is about the only grade of iron and steel scrap showing life. Dealers have curtailed yard forces and are not buying except to meet immediate needs.

Toronto, Ont., Nov. 19.—Demand for iron and steel scrap still is confined chiefly to small tonnages for immediate needs. No larger forward contracts were placed during the week and inquiry is limited. Consumption of scrap is well sustained and dealers report a good prospective demand. Steel scrap is moving slowly both in the Toronto and Montreal districts and iron grades are responsible for the improvement.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$22.00
Steel axles	20.00
Car wheels	16.00
Stove plate	13.00
Wrought pipe	6.00
Turnings	6.50
Heavy melting steel	8.00

TORONTO

Steel axles	15.00
Iron axles	17.00
Heavy melting steel	9.50
Turnings	7.50
No. 1 mach. cast (net)	16.00
Malleable (net)	12.50

Semifinished Steel

Sheet Bars Reported Sold at $34—New Orders Light

SEMIFINISHED STEEL PRICES, PAGE 1330

Pittsburgh, Nov. 19.—Little interest is shown in new semifinished steel business and specifications against old contracts are slow. There is some question regarding the strength of current prices of $35 for rerolling, billets, sheet bars and slabs, but the absence of new business in sizable lots prevents these quotations from being tested although it is thought not unlikely that a substantial order would bring about a lower price. Wire rods are steady at $40 and forging billets are holding fairly well at the same figure. There is little interest as yet in first quarter requirements.

Philadelphia, Nov. 19.—Several small billet sales were made at $35 base, Pittsburgh, to rerollers. Forging grade brought $40, Pittsburgh. Wire rods are $40, Pittsburgh.

Cleveland, Nov. 19.—While shipments of sheet bars, billets and slabs continue to be made by the leading local merchant producer on $35, Cleveland and Youngstown, contracts, reports are persistent that $34 has applied in the open market recently on sheet bars. This maker continues to operate eight of its 14 open hearths. Specifications and new orders are light.

Youngstown, O., Nov. 19.—With sheet mill operation at 38 per cent of capacity, semifinished steel shipments have declined. A sale of sheet bars was closed in a nearby territory at $34 at the beginning of the week.

Operating Rates

Chicago, Buffalo Holds As Pittsburgh Rallies, Valley Down

Pittsburgh—Ingot production averages 70 to 75 per cent. The increases are reported this week in schedules of finishing mills, after several weeks of steady declines. Sheet production is higher, close to 70 per cent, with tin plate up slightly at 65 per cent. Strip mill operations, on the other hand, are lower at 40 to 50 per cent. Pipe mill schedules are down a few points at 60 to 65 per cent.

Buffalo—Steelworks operations based on open-hearth production dropped from 70 per cent last week to 63 per cent at the beginning of this week. Smaller demand for all grades of finished steel except rails, for which large orders are held here, is responsible for the decline. Producrs see small prospect of any material advance in operations between now and Jan. 1.

Youngstown, O.—District steelmaking and finishing mill operations have receded to the lowest point in several years. Independent open-hearth steel producers have 19 of 51 furnaces melting or 37 per cent. One open-hearth shop is entirely idle. The Steel corporation has 60 per cent of steelmaking capacity engaged. Of the 120 sheet mills, 46 are under power or 38 per cent. Strip mill operation is about 60 per cent, pipe mill 63 per cent and bar mill 65 per cent.

Chicago—While declines of a few points each have been shown in operations of several of the finishing mills, the ingot output remains unchanged at about 75 per cent, with 24 of the 36 steelworks blast furnaces in the district active. Bar mills in the district now are down to about 75 per cent, while structural mills are operating at a 70 to 75 per cent rate. The operating position of plate mills is unchanged at about 80 per cent. Sheet mill output has dropped more than 5 points to about 60 to 70 per cent. Rail mills have stepped up production about five points to 85 per cent.

October Sets Record for Foundry Equipment

Cleveland, Nov. 19.—Foundry equipment orders for October increased over September and were the highest of any September in three years and only exceeded by two other months for the same period, according to the Foundry Equipment Manufacturers' association. October shipments were 214.1 with unfilled orders of 492.5 and gross orders for three months averaging 230.3, taking the average of 1922-24 as 100. Monthly comparisons follow:

	1926	1927	1928	1929
Jan.	168.2	180.4	132.7	180.5
Feb.	154.9	198.0	123.6	197.0
Mar.	157.3	131.1	138.6	209.4
Apr.	113.2	130.1	107.7	172.6
May	128.5	134.8	325.6	177.7
June	133.5	138.4	149.1	177.3
July	127.3	89.9	94.8	218.6
Aug.	141.2	106.4	278.0	229.5
Sept.	114.0	80.4	170.0	216.3
Oct.	140.5	98.0	185.0	240.3
Nov.	133.4	95.8	197.8	.....
Dec.	181.0	106.8	166.5	.....

Base: Average monthly shipments for 1922-23-24.

Capitol Foundry Co., Mystic, Conn., has rented part of the plant of the Standard Machinery Co., for additional manufacturing space.

The Market Section

Bars

Slow Buying and Specifications Reduce Production—Prices Hold Steadily on Small Lots

CONTINUED lack of specifications from all classes of buyers has reduced production steadily and mills at Chicago, which have held up well, now are at about 75 per cent capacity. Some help is being received from tractor and agricultural implement manufacturers. Pittsburgh mills find November below October tonnage. Prices are not yielding in spite of small demand.

BAR PRICES, PAGE 1329

Chicago, Nov. 19.—Bar mill operations, which have been reduced gradually for several weeks, now are at about 75 per cent. Mills report slightly improved rolling conditions owing to more satisfactory volume of carload orders. Specifications for bar products took a mild spurt in the week just closed. The absence of automotive tonnage is felt keenly. An encouraging feature is increased interest of tractor builders, whose requirements had been low for many weeks. Tentative programs call for heavier winter production schedules in the tractor industry than had been expected, while implement works are proceeding with their usual output of spring and early summer tillage and haying tools. On the whole, specifications for finished steel products are holding their own, even leaving railroad equipment orders out of consideration. Producer surveys indicate little change for the past six or eight weeks, while one finished producer reports November specifications a few thousand tons ahead of last month.

Soft steel bars are 2.00c to 2.05c, Chicago, with most tonnage sold on the 2.00c base. Alloy steel bar prices are untested, while mill operations are 55 to 60 per cent. Bar iron is quoted more generally at a base price of 2.00c, Chicago.

New York, Nov. 19.—Demand for steel bars is quiet, with deliveries now ranging two to four weeks. Most carload business is going at 1.90c, Pittsburgh.

Pittsburgh, Nov. 19.—Bar demand is at the slow rate of the past few weeks, and tonnage for the first half of November shows a decrease compared with the October rate. Cold bar finishers have reduced their commitments, reflecting poor demand from automotive interests. The approach of inventory season, coupled with the ordinary desire to hold stocks at a minimum, is making hand-to-mouth buying more pronounced. Alloy steel bars are quiet. The market is fairly steady at 1.90c, Pittsburgh.

Cleveland, Nov. 19.—Merchant steel bar specifications continue small. Automotive consumers are particularly slow. Agricultural implement business, while expected to be large for next spring, is not yet developing. The 1.90c, Cleveland, price still is named.

Philadelphia, Nov. 19.—Steel bar demand continues good, although somewhat below October average. Price is firm at 1.90c, base, Pittsburgh. Railroads and ice machinery manufacturers have been particularly good buyers the past week. Jobbers also have submitted good specifivations.

Extend Sheet Standard

Washington, Nov. 19.—A. B. Galt, simplified practice division, department of commerce, is advising sheet steel manufacturers, distributors and users that the standing committee of the industry has reaffirmed "the existing schedule, without change, for another year." This refers to simplified practice recommendation R28-29 relative to sheet steel.

To Start Canadian Tin Plate Mill Soon

Toronto, Ont., Nov. 19.—Ward B. Perley, president, Canadian Steel Corp., announces that the construction at Windsor, Ont., of a tin plate mill will be started at once. The mill, the cost of which is estimated at $1,500,000, will be 1 story, concrete and steel construction. The steel will be fabricated by the Canadian Bridge Co., a subsidiary of the United States Steel Corp., while the general construction work will be done by Canadian Steel Corp. employes. Plans call for the production of tin plate to begin by July, 1930. Annual capacity will be 60,000 tons. In addition to making tin plate the company will galvanize black sheets.

Republic Gear Co., Detroit, has changed its capital from $100,000 to $400,000 and 80,000 shares no par value.

Plates

Locomotive Work Aids Market in East—Demand in Middle West Is Quieter—Prices Are Steady

PROSPECTIVE railroad work features the plate market in eastern districts, more locomotives pending than in many months. The volume of new orders at Pittsburgh continues to decline, and in the Middle West business is mainly of a miscellaneous, spot character. Shipments to welded pipe interests are slightly heavier, while tank work is less active.

PLATE PRICES, PAGE 1329

Pittsburgh, Nov. 19.—Incoming plate tonnage shows a decline so far this month compared with October, although business remains seasonally heavy. The lack of new orders in pipe lines is reducing one plate outlet that had been active during preceding months this year, and barge builders also have reduced their backlogs materially. Freight car work continues active, and tank and miscellaneous work remains in fair volume. The market generally is 1.90c, Pittsburgh, with 1.95c continuing in instances.

New York, Nov. 19.—Plate prices continue 2.00c to 2.05c, Coatesville, with deliveries averaging two weeks. Aside from the two United States Lines boats on which bids will be opened Nov. 20, little new ship work is pending. Prospective railroad equipment work features the outlook at present, with more locomotives pending than in many months and with a substantial amount of freight car business in sight. During the past week there has been a little railroad equipment buying in this district. Pipe and tank work is quiet, although including 3000 tons of 60-inch pipe for the local water department on which the Oakhill Contracting Co. has just been awarded the general contract. Fifteen hundred tons of tank work for the Standard Oil Co. of New Jersey, for Philadelphia, continue pending.

Cleveland, Nov. 19.—Miscellaneous plate demand keeps up well in this territory, notwithstanding the fact that more tank, boiler and plate fabricating shops are laying off men. Pipe lines for Cleveland and Detroit, requiring 1000 to 2000 tons each have not been let. The local one will be readvertised. The Detroit line will be placed this week. The Lima Locomotive Works probably will be purchasing more plates for the eight locomotives awarded it by the Kentucky & Indiana Terminal Co. Plates are quoted 1.90c to 1.95c, Pittsburgh, with the larger figure applying on small quantities.

Chicago, Nov. 19.—Plate mill operations are close to 80 per cent for the district. Deliveries are being made

in two to three weeks. Most of the incoming spot tonnage is divided among car building shops, small tank orders from the oil fields, and miscellaneous manufacturing and welded pipe interests. Shipments to the latter are in slightly heavier volume after having reached a low point in recent weeks due to suspension of work on pipe lines. Future contracting is light. A local fabricator has booked 400 to 500 tons of tank plates for southwestern oil refinery work, and 2000 to 2500 tons of tankage has come out in inquiry. The price for plates is 2.00c, Chicago, with tonnage differentials below and above that quotation.

Philadelphia, Nov. 19.—Plate demand continues fair, although less than the October average. Considerable tonnage is expected to come out soon for ship and locomotive builders. Prices continue 2.00c to 2.05c, base. Coatesville.

CONTRACTS PLACED

400 tons, tanks for British Columbia Wood Preserving Co., Vancouver, B. C., to Vancouver Engineering Works.
150 tons, ball mill for Granby Consolidated Mining Co., Granby, B. C., to Vancouver Engineering Works.
Unstated tonnage for pipe line in California, to A. O. Smith Corp.

CONTRACTS PENDING

3000 tons, 60-inch steel pipe, water department, New York, for installation in Brooklyn; general contract awarded to the Oakhill Contracting Co., previously noted as low bidder.

Auto Production Lower in October

Washington, Nov. 19.—October production of automobiles in the United States, at 379,942 units, bore out the predicted decline with a sharp reduction from September. It was also lower than October, 1928. Figures for the ten months compared with the same time last year show a gain in the United States of 1,150,303 units, according to the department of commerce comparison which follows:

	United States			Canada
	Total	Passenger cars	Trucks	Total
1928				
October	397,284	339,487	57,138	18,536
Total (10 mos.)	3,867,503	3,399,425	463,101	221,188
November	257,140	216,754	39,686	11,769
December	234,116	204,957	28,123	9,425
Total (year)	4,358,759	3,821,136	530,910	242,382
1929				
January	401,037	347,382	51,591	21,501
February	466,353	405,708	58,537	31,287
March	585,223	513,344	69,800	40,621
April	621,347	537,225	82,436	41,901
May	*604,084	516,055	*86,711	31,559
June	*545,356	452,598	*91,380	21,492
July	*500,392	426,137	*73,201	17,461
August	*498,375	441,942	*55,393	14,214
September	*415,697	364,786	*50,046	13,817
October	379,942	320,327	58,747	(2)
Total (10 mos.)	5,017,806	4,325,504	677,842	.....

* Revised. (2) Not available.

Pipe

Price Weakness in East—New York Buys 750 Tons—Erie Wants 72-Inch Steel Pipe

WHILE cast pipe prices remain unchanged at Birmingham, Ala., delivered prices have receded about $1 at New York. Price weakness is spreading to small lots. About 850 tons was purchased in that territory; 558 tons is up in three Californian projects; 12 to 13 miles of 4 to 12-inch will be bought in Hempstead, L. I. Steel pipe is fairly active in the East.

PIPE PRICES, PAGE 1330

New York, Nov. 19.—Cast iron pipe prices continue weak. This has spread to small shipments. Little buying is going on outside this city, where 750 tons were placed. Some pipe has sold around $36 for 6-inch class B and larger. A few scattered carloads are moving, but in general buying is at low ebb. New York is expected to contract for a part of next year's requirements within the next few weeks. Between 12 and 13 miles of pipe, 4 to 12 inch, specified for 150-pound pressure, will be bought by Hempstead, L. I.

Producers are figuring on 1000 tons of lapweld pipe for export to South America. Mill deliveries of this grade average three weeks; buttweld four to five days. Demand for the latter has shown material improvement recently.

Pittsburgh, Nov. 19.—All tubular products are in a slower market. Demand for standard merchant pipe, seamless and mechanical tubing, etc., is showing a further letdown. The only inquiry of importance in the line pipe market is the proposed project of the Standard Oil Co. of California. No additional projects have developed and the line contemplated by the Doherty interests has been dropped, at least for the present. Demand from the oil country is receding, partly due to the conservation policy being applied in western fields. Mechanical tubing continues slow but locomotive and boiler tubing remain fairly active. Operations are off slightly, with the average for the district 60 to 65 per cent.

Boston, Nov. 19.—About 350 tons of pipe comprised the awards in this district last week. Lettings include 6 and 8-inch pipe as well as fittings. Watertown arsenal placed 150 tons, Wayland, Mass., 100 tons, and Salem, Mass., 100 tons. Private business remains good. Prices show firmness, especially on smaller sizes. The $4 differential still applies on class A and gas pipe.

Buffalo, Nov. 19.—A large pipe order is in prospect at Erie, Pa. It will close bids Nov. 22 on 8800 feet of 72-inch pipe for a new intake. Otherwise the market is quiet.

Cleveland, Nov. 19.—Orders for standard full weight merchant pipe from jobbers are smaller than in several weeks. Occasional carload orders develop for standard sizes which are filled immediately from mill stock. Electric welded pipe may be utilized for both Detroit and Cleveland large diameter water lines, up for several weeks. The trade believes the one for Cleveland will be readvertised to admit that type of bidder. Utility companies are not yet issuing their spring inquiries and these may not now come out until after Jan. 1.

Chicago, Nov. 19.—Pressure pipe orders remain extremely light. Surveys by public utility companies indicate that 1930 needs will represent normal requirements. Winter buying, however, is not expected to develop for at least a month. Peoria, Ill., and Grand Rapids, Mich., are in the market for moderately heavy tonnages of sewage pipe and fittings. Saginaw, Mich., awarded 200 tons of 6 to 24-inch. The light volume of business hardly suffices to test present quotations.

Birmingham, Ala., Nov. 19.—Few cast pipe lettings are being received. Production of both pressure and soil pipe is being eased down. The lull is declared seasonal with prospects for the coming year bright. Little stock has been placed on yards or in sheds preparatory to the spring demand. Equipment is being given attention looking toward a large volume of business a little later. Quotations are still $37 to $38 on 6-inch and larger.

CONTRACTS PLACED

7000 feet of 6 and 8-inch water pipe for Lowell, Ind., awarded through contractor.
600 tons, 6 to 20-inch, mostly 20-inch, for Borough of Queens, N. Y., reported placed with United States Pipe & Foundry Co.
200 tons, 6 to 24-inch water pipe for Saginaw, Mich., to Lynchburg Foundry Co.
150 tons, 6 and 8-inch pipe with fittings, United States arsenal, Watertown, Mass., to Warren Foundry & Pipe Co.
150 tons, 6 to 20-inch, mostly 20-inch, for Borough of Manhattan, to Donaldson Iron Co.
100 tons, 6-inch pipe, Wayland, Mass., to Warren Foundry & Pipe Co.
100 tons, 6 and 8-inch pipe, Salem, Mass., to United States Pipe & Foundry Co.

CONTRACTS PENDING

293 tons, improvement La Mesa colony, San Diego, Calif. Bids, Dec. 2.
147 tons, 8 and 16-inch class B, East Bay Municipal Utility District, Oakland, Calif.; C. G. Claussen & Co. low bidder.
118 tons, 4 to 10-inch class B, improvement to

Olive street, Compton, Calif. Bids opened.
Unstated tonnage, 4000-foot force main, 20-inch cast iron pipe, Fond du Lac, Wis.; G. H. Stanchfield, city engineer, will take bids soon.
Unstated tonnage 12 to 13 miles, 4, 6 and 12-inch, Hempstead, N. Y.; bids opened.

STEEL PIPE

8800 feet, 72-inch, for new intake, Erie, Pa.; bids received Nov. 22 by B. J. Lechner, secretary, water commission, Erie.
1500 tons, 54 and 66-inch steel water pipe for Detroit; up for award this week.
1000 tons or more, 48 and 60-inch steel water pipe for Cleveland; to be readvertised.
1000 tons, lapweld steel pipe for South America; producers figuring.

Tin Plate

Price Reaffirmed for First Half—Specifications Good

TIN PLATE PRICES, PAGE 1330

Pittsburgh, Nov. 19.—Books on tin plate have been opened for the first half of 1930 at $5.35 per 100-pound base box, Pittsburgh, unchanged from the 1929 price. This compares with $5.25 during 1928 and $5.50 during the four preceding years. Specifications have been received in good volume for January shipment and despite the fact canmakers are expected to carry over a larger inventory at the end of the year than was true 12 months ago, tin plate business during the first part of 1930 gives indications of comparing favorably with the active first quarter rate of this year. Operations have been increased slightly this week from the 60 to 65 per cent rate a week ago which marked the lowest level of the year. The current average is around 65 per cent.

New York, Nov. 19.—Tin plate price for first half of next year has been announced at $5.35 per 100 pound base box, Pittsburgh. Announcement in regard to black plate is expected shortly. Meanwhile, black plate is holding around 2.90c, Pittsburgh.

Iron Ore

Taking Off Iron Ore Boats—Record Still Uncertain

IRON ORE PRICES, PAGE 1330

Cleveland, Nov. 19.—Lake shipping of iron ore is easing off, with 3,151,000 tons moved in the first 15 days of November, and producers hoping to make it 4,000,000 tons by the close of the month. The Pittsburgh Steamship Co., Steel corporation subsidiary, is reported to have loaded its last iron ore cargo for the season, and several of the independents are preparing for an early close. Lake shipments for the season are likely to establish a new record, but the decrease in the all-rail movement makes the total uncertain. Consumption of Lake Superior iron ore in October totaled 5,382,561 tons, an increase of 20,994 tons over September, and 357,919 tons more than in October 1928. The balance on hand at lower lake docks and furnaces Nov. 1 was 41,134,926 tons, or 1,580,314 tons more than on Nov. 1, 1928.

Sheets

New Business and Operations in Pittsburgh District Show Some Improvement—Prices Easier

A SLIGHT improvement is noted in the sheet market in some districts, though demand from the automotive industry continues quiet. Freight car builders are taking substantial tonnages; metal furniture and electrical equipment manufacturers also are busy. Operations in the Pittsburgh district have increased to 70 per cent; 38 per cent is the average in the valley.

SHEET PRICES, PAGE 1329

Pittsburgh, Nov. 19.—Sheet business shows a slight improvement. Automotive tonnage shares only moderately in the pick-up, and still is decidedly light. Although most other consumers are buying only for immediate needs the volume is fairly good for this period. Freight car builders are taking substantial sheet tonnages and are more active buyers than a year ago. Metal furniture manufacturers and electrical equipment builders continue busy. Sheet operations are up this week from the year's lowest level attained a week ago, with the current rate nearly 70 per cent. Prices show a slightly easier tone. The 3.40c quotation on galvanized is becoming more general to jobbers and in occasional instances to consumers. Black sheets appear pegged at 2.75c. Blue annealed generally are 2.35c for 13 gage and 2.20c, for 9 and 10 gage, but occasional prices of 2.25c and 2.10c are heard. Automobile sheets continue quiet with the 4.00c price untested on current light business.

New York, Nov. 19.—Galvanized sheet prices are easier at 3.40c to 3.50c, Pittsburgh. Black sheets are holding at 2.70c to 2.75c; blue annealed plates at 2.10c, with occasional shading under this figure; and blue annealed sheets 2.25c to 2.35c, with the larger figure becoming more general. Sales are light.

Youngstown, O., Nov. 19.—The sheet market continues quiet, most orders being for immediate shipment. While prices of blue annealed and galvanized are reported to have softened in the eastern market, producers here are not inclined to quote below present levels. Current prices are 2.35c for blue annealed, 2.75c for black and from 3.40c to 3.50c for galvanized, base, Pittsburgh. High-grade tonnage is quoted at 4.00c, base, Pittsburgh. Business is being placed sparingly by Detroit consumers. Specifications for metal furniture stock are being released in good volume. This week only 46 of the 120 district sheet mills are active, or 38 per cent of capacity. Five plants failed to start.

Cleveland, Nov. 19.—Sheet specifications continue to decline. Some mills are doing better than 65 per cent, but the majority are on a 50 to 60 per cent basis. Automotive needs are not expanding as fast as expected. Steel barrel manufacturers are entering their dull season. Furnace builders' needs are fairly large. Steel car door manufacturers are consuming large tonnages of blue annealed sheets. Prices continue to show weak spots. Galvanized are more plentiful at 3.40c, but 3.50c has not disappeared.

Cincinnati, Nov. 19.—Sheet mills have reduced operating schedules to about 65 per cent of normal. Orders reflect cautious buying. Demand for galvanized sheets for roofing has held up well. Autobody sheets continue 4.00c, Pittsburgh.

Chicago, Nov. 19.—Marketing of steel sheets is featured by a fair volume of spot business, with few future orders. Fairly prompt deliveries can be made on black and galvanized sheets, while blue annealed backlogs run about two weeks. Sheet mill operations for the district have dropped to 60 to 70 per cent. No. 24 black sheets have been marked down $2 a ton, now being quoted 2.85c, Gary and Indiana Harbor, and 2.90c, delivered Chicago. No. 24 galvanized sheets now are quoted at a flat price of 3.60c, Gary and Indiana Harbor, and 3.65c, delivered Chicago.

St. Louis, Nov. 19.—While activity in sheets continues at a fairly high rate, it is at the expense of backlogs, as shipments are running ahead of current bookings. Requirements by car builders have tended to offset smaller needs of the automobile makers. Prices are unchanged.

Philadelphia, Nov. 19.—Sheet demand is fair but not nearly sufficient to satisfy mills. Operations in some cases are below capacity. Prices are unchanged on general business but occasional concessions are made on attractive tonnages.

Would Delay New Rates

Washington, Nov. 19.—Eastern railroads Nov. 14 petitioned the interstate commerce commission to postpone the effective date of the mileage scale rate on iron and steel products resulting from investigation No. 17,000. Last week the commission announced that proposed rates on bars, plates and shapes will be subject to further hearing, beginning at New York Dec. 3, but that otherwise the mileage scale rate would take effect as of Dec. 20.

The earliest specific reference to cannon was in the year 1301 when cannon were made at Amberley in England.

Structural Shapes

Structural Activity Still Marked—Subways Figure Largely in New York and Power Houses in West—Prices Tend Easier

BUILDING activity in various sections continues the bright spot of the steel market. Three awards in Vancouver, B. C., take 11,000 tons. New York still remains active both in awarding and inquiring for structural material. A subway section there, 12,500 tons, went to American Bridge Co. Another section 6800 tons, will be let later this week and one taking 5150 tons, is being refigured. Apartments and lofts are up there, too, taking up to 3200 tons at a time. A power plant in Vancouver takes 3000 tons and one in northern Illinois 3500 tons. Pittsburgh awaits developments in connection with McKees Rocks, Pa., bridge and a Gulf Refining Co. building. Buffalo looks to grade crossing eliminations for large tonnages. Prices are easier on large lots.

STRUCTURAL SHAPE PRICES, PAGE 1329

New York, Nov. 19.—Shape lettings this week were topped by 12,500 tons for a subway section, going to American Bridge Co. Another section calling for 6800 tons is due to be placed later in the week; one involving 5150 tons is being readvertised. Demand for structural steel continues heavy. Pending projects indicate little recession during the remainder of the year. Apartment houses call for a large tonnage. A loft building will take 3200 tons. More than 6500 tons is up for a telephone building at Brooklyn, N. Y. Mills still have fair backlogs. Fabricators are rushing to capacity in some instances to meet delivery, one Elmira, N. Y., shop naming late February delivery. Prices are inclined to be easier on attractive tonnages, although the price range nominally is 2.145c to 2.195c, New York. Work on several subway sections is threatened by labor trouble.

Boston, Nov. 19.—Less than 500 tons of shapes was involved in structural awards here last week. The largest was 365 tons for railroad signal bridges.

Buffalo, Nov. 19.—An order for more than 800 tons of structural for the new Attica prison will be placed within a few days by the general contractor. Another big pending tonnage, although contract probably will not be made until next month, is for elimination of the Amherst, Austin and Tonawanda street grade crossings in Buffalo.

Mosier & Summers were awarded the general contract for a nurses' home for the $503,000 Buffalo City hospital. Work will start this week.

Pittsburgh, Nov. 19.—Considerable structural steel work is in prospect in this district but little of it has come up for bids. Included in this list is the McKees Rocks bridge over the Ohio river, and the Gulf Oil Co. building. A fair volume of work still is pending although large individual tonnages are lacking. Recent awards involve only small lots. Operations of local fabricators remain nearly full but the trend is downward.

Cleveland, Nov. 19.—While the larger projects involving shapes continue to encounter delays of various sorts, smaller jobs are let from time to time. Monticello junior high school for Cleveland Heights, 400 tons, went to Niles Forge & Mfg. Co.

Cincinnati, Nov. 19.—Bids are being asked on the first allotment of steel for the Cincinnati terminal project, which ultimately will require 40,000 tons.

Chicago, Nov. 19.—With the aid of car shop orders for light shapes, specifications for plain material hold moderately well. About 5500 to 6000 tons have come out in building and bridge inquiry, including 3500 tons for a power house in northern Illinois, 1000 tons for the Roosevelt road bridge, Chicago, and 850 tons for an office building in Phoenix, Ariz. Awards totaled about 4500 tons, largely for work at western points. Building awards in the Chicago district now are light. The 1000-ton highway bridge over the Arkansas river in Oklahoma, a 1200-ton hotel at Kansas City, and theaters at Denver and Fort Wayne, Ind., totaling 525 and 400 tons, are included in awards.

Philadelphia, Nov. 19.—Shape demand is fair and eastern mills continue able to maintain operations at around 80 per cent. Prices are unchanged at 1.96c to 2.01c, base, delivered Philadelphia, with lower levels applying on attractive lots.

Birmingham, Ala., Nov. 19.—Fabricating shops are active, endeavoring to complete contracts on hand as well as the small additional tonnages received almost daily. Three or four large tonnages are pending and shops here are active in bidding on these.

CONTRACTS PLACED

12,500 tons, subway section 10, route 107, New York, to American Bridge Co.

7000 tons, hotel, Vancouver, B. C., Canadian National Railways, reported let to Dominion Bridge Co.

6800 tons, assembly plant, Ford Motor Co., Edgewater, N. J., to McClintic-Marshall Co., through Albert Kahn, Detroit, architect.

4000 tons, apartments, Madison avenue and Seventy-sixth and seventh streets, New York, to Paterson Bridge Co.

2,200 tons, Marine building, Vancouver, B. C., to Dominion Bridge Co.

2000 tons, apartment, Park avenue and Eighty-ninth street, New York, to Taylor-Fichter Steel Construction Co.

1800 tons, building, Royal Bank of Canada, Vancouver, B. C., to Dominion Bridge Co.

1454 tons, apartments, 431 East Fifty-first and East Fifty-second streets, New York, to Lehigh Structural Steel Co.

1340 tons, state highway bridge at Sturgeon Bay, Wis., to Wasau Iron Works; reported last week as 1000 tons.

1200 tons, Phillips hotel, Kansas City, Mo., to Kansas City Structural Steel Co.

1000 tons, highway bridge over Arkansas river at Sand Springs, Okla., to Kansas City Structural Steel Co.

1000 tons, building for Greene-Cananea Copper Co., to Kansas City Structural Steel Co.

900 tons, Crawford street bridge, Providence, R. I., reported let to Boston Bridge Works Inc.

800 tons, Newton high school, Queens, New York, to Harris Structural Steel Co. through Royal-Rice Co. Inc.

738 tons, Shasta river bridge, Sacramento, Calif., to Minneapolis-Moline Power Implement Co.

700 tons, bridges, Baltimore & Ohio railroad, to American Bridge Co.

600 tons, Jewelry Trades building, Philadelphia, to American Bridge Co.

550 tons, Proviso township high school, Maywood, Ill., to Mississippi Valley Structural Steel Co.

525 tons, Publix theater, Denver, to E. Burkhardt & Sons Steel & Iron Co.

485 tons, St. John's Riverside hospital, Yonkers, N. Y., to Hinkle Iron Co.

460 tons, Spence bridge, Thompson river, B. C., to Western Bridge Co.; previously reported as 200 tons.

450 tons, public school No. 199, Brooklyn, N. Y., to Easton Structural Steel Co.

400 tons, theater building, Fort Wayne, Ind., to Central States Bridge Co.

400 tons, Monticello junior high school, Cleveland Heights, O., to Niles Forge & Mfg. Co.

365 tons, 10 signal bridges, Boston & Maine railroad, to Boston Bridge Works Inc.

350 tons, warehouse, Western Sugar Refining Co., San Francisco, to Dyer Bros.

300 tons, plant for the Link-Belt Co., San Francisco, through Meese & Gottfried Co., San Francisco, to Pacific Coast Engineering Co.

300 tons, highway bridge work, Peoria, Ill., to Hartmann Clark Bros. Co.

280 tons, building, Mutual Telephone Co., Erie, Pa., to Erie Steel Construction Co.

265 tons, highway bridge, Brookneal, Va., to Virginia Bridge & Iron Co.

250 tons, apartment, Manhattan avenue and One Hundred and Sixth street, New York, to J. Klein Inc.

250 tons, engineering and storage building, Auburn Automobile Co., Auburn, Ind., to W. C. Rogers, local.

238 tons, bridge, New York Central railroad, Coxsacki, N. Y., to American Bridge Co. through Bates & Rogers Construction Co.

200 tons, addition to merchant mill, Indiana Harbor, Ind., works, Youngstown Sheet & Tube Co., to Hansell, Elcock Co.

Awards Compared

	Tons
Awards this week	52,792
Awards last week	33,215
Awards two weeks ago	40.552
Awards this week in 1928	43,547
Average weekly awards, 1928	39,082
Average weekly awards, 1929	41,936
Average weekly awards, Oct.	42,695
Total awards to date, 1928	1,820,280
Total awards to date, 1929	1,971,006

185 tons, Haberfelde building, Bakersfield, Calif., to McClintic-Marshall Co.
175 tons, warehouse, Crane Co., Los Angeles, to Consolidated Steel Corp.
175 tons, building, Jocelyn Mfg. Co., South Bend, Ind., to unstated fabricator.
172 tons, bridge on Holbrook-Lupton highway, Phoenix, Ariz., to unstated fabricator.
150 tons, apartment, Sixteenth and Clement streets, San Francisco, to McClintic-Marshall Co.
140 tons, Delaware river bridge underpass, Philadelphia, to American Bridge Co.
125 tons, packing plant, Yorba Linda, Calif., to Pacific Iron & Steel Co.
120 tons, telephone building, Bakersfield, Calif., to Judson-Pacific Co.
100 tons, airplane hangar, Milwaukee, to Lakeside Bridge Co.
100 tons, apartment, Fifteenth and West Portal street, San Francisco, to McClintic-Marshall Co.
100 tons, brewery, New Westminster, B. C., to Western Bridge Co.
100 tons, airplane hangar, Valley Stream, L. I., to Jones & Laughlin Steel Corp.
100 tons, school building, Danvers, Mass., to Boston Structural Steel Co.
100 tons, highway bridge, Brighton, N. Y., to American Bridge Co.

CONTRACTS PENDING

5150 tons, subway, section 3, route 110, New York. Readvertised for bids.
5000 tons, Conventoin hall, Philadelphia; new bids to be requested.
5000 tons, Mayflower hotel, Akron, O. Plans to be issued later in the month.
3500 tons, power house, Public Service Co. of Northern Illinois, Waukegan, Ill.
3200 tons, loft building, Madison avenue and Seventy-sixth street, New York.
3000 tons, power plant and penstock, British Columbia Electric Co., Jordan river, B. C. Bids requested.
1500 to 2000 tons, first section, National Town and Country club, East Twenty-fourth street and Euclid avenue, Cleveland; bids asked Nov. 26 by Thompson-Starrett Co., general contractor.
1250 tons, building, Fifty-seventh street and Fifth avenue, New York.
1000 tons (estimated) building, Miller-Wohl Co., Euclid avenue near East Fourth street, Cleveland. Bids to be asked soon.
1000 tons, Roosevelt road bridge over Chicago river, Chicago.
900 tons, miscellaneous bridge work, Chicago, Burlington & Quincy railroad.
800 tons, Presbyterian hospital, Philadelphia; general contract to Irwin & Leighton.
850 tons, office building at Phoenix, Ariz.
700 tons, Y.M.C.A. building, Akron, O. Plans not yet out.
700 tons, Y.W.C.A. building, Akron, O. Plans not yet out.
500 tons, telephone building, Monticello, N. Y.
450 tons, clubhouse, Erie club, Erie, Pa.; project held up for financing.
400 tons, office building, New York & Queens Light & Power Co., Flushing, N. Y.
400 tons, plant addition, Firth Carpet Co., Auburn, N. Y.
400 tons, pier and dock extension, Canadian National Railways, Vancouver, B. C. Bids requested.
330 tons, widening roadway, Washington bridge New York.
375 tons, railroad bridge, Shinnecock, Long Island, N. Y.
100 tons, ice plant, Somerville, Mass.
100 tons, building, Sinclair Refining Co., East Seventy-first street and Carnegie boulevard, Cleveland; general contract to J. E. Christian Co.
Unstated tonnage, three grade crossing eliminations at Buffalo.
Unstated tonnage, first allotment of steel for Cincinnati terminal project. Bids being taken. This ultimately will involve 40,000 tons.
Tonnage unstated, buildings at Toledo, O., Pittsburgh and Charleston, S. C., for Firestone Tire & Rubber Co., Akron, O.
Tonnage unstated, Severance hall, Cleveland Orchestra home, Cleveland; Crowell & Little Construction Co., general contractor, to issue plans soon.

Lake Shore Engine Works, Marquette, Mich., has changed its capital from $300,000 common and $50,000 preferred to 60,000 shares no par value.

Concrete Bars

Prices Yield $2 Under Pressure—Subway Work May Now Be Released

YIELDING to buyers' pressure, prices on concrete bars finally have receded $2 at Pittsburgh. This may release tonnages in the East, held up because of high costs. This includes much subway work. Awards are fewer in number. Inquiry is less active, colder weather having its usual effect. Small projects are being rushed to completion. About 700 tons was let in New Jersey.

REINFORCING BAR PRICES, PAGE 1329

New York, Nov. 19.—While buyers are bearing down on concrete reinforcing bar prices, mills hold fairly firm to a basis of 2.05c, Pittsburgh, for mill lengths. Some business has moved at 2.00c, and under, according to report, but hardly enough to establish the market at that figure. Some soft spots are also reported in warehouse prices, but 2.90c holds for the bulk of the volume. More than 1000 tons for subway work is held up for the time being due to pressure for lower prices on the part of buyers.

Boston, Nov. 19.—Small awards aggregated about 100 tons, constituting one of the most quiet weeks on record. No large tonnages appear ready for placement.

Pittsburgh, Nov. 19.—New business in concrete reinforcing bars is light, although shipments against old orders remain fairly heavy. Mills have reduced their backlogs materially during the past 30 days, however. Both awards and inquiries in this district are limited to small tonnages. Prices have been reduced $2 a ton with current quotations 2.20c, Pittsburgh, for cut lengths and 1.95c for stock lengths.

Buffalo, Nov. 19.—An additional 360-ton lot of reinforcing bars is required for the superstructure of the new Buffalo city hall and will be purchased shortly by John W. Cowper Co., general contractor. The Amherst grade crossing elimination is another large pending project although it has not reached contract stage.

Cleveland, Nov. 19.—Culvert contracts recently booked by the Lowensohn Construction Co. for Cleveland and vicinity involve approximately 400 tons of concrete bars. These were awarded Bourne-Fuller Co. Small lots recently booked by Paterson-Leitch Co., include the Monticello junior high school, Cleveland Heights, O. Prices usually named are based on 1.95c, Pittsburgh, but 1.95c, Cleveland, and lower have appeared.

Chicago, Nov. 19.—A fair amount of contemplated building work calling for reinforcing bars is being held back by credit difficulties. It is reported the Missouri highway commission will require 600 to 700 tons of bars, and about 235 tons will be bought for the Public Service Co. of Northern Illinois. A high school building at Maywood, Ill., will take 150 tons, and a building for the Illinois Bell Telephone Co., at Aurora, Ill., will require 130 tons. Quotations as low as 1.90c are reported for billet reinforcing bars.

Awards Compared

	Tons
Awards this week	2,115
Awards last week	3,810
Awards two weeks ago	6,771
Awards this week in 1928	3,370
Average weekly awards, 1928	6,189
Average weekly awards, 1929	6,024
Average weekly awards, Oct.	5,969
Total awards to date, 1928	305,667
Total awards to date, 1929	283,149

CONTRACTS PLACED

400 tons, apartment building, Chicago, to Inland Steel Co.
400 tons, culvert work, Cleveland and vicinity, to Bourne-Fuller Co., through Lowensohn Construction Co.
350 tons, Monoservice building, Newark, N. J., to Igoe Bros.
250 tons, warehouse, Varick street, New York, to Edward T. Edwards.
200 tons, factory, National Biscuit Co., Newark, N. J., to Faitoute Iron & Steel Co.
180 tons, prison addition, Auburn, N. Y., to Edward T. Edwards.
135 tons, bank vaults, National Newark & Essex bank, Newark, N. J., to Faitoute Iron & Steel Co.
100 tons, apartment, Union street, San Francisco, to W. C. Hauck & Co.
100 tons, including Monticello junior high school, Cleveland Heights, O., to Paterson-Leitch Co., through Gilchrist Construction Co., general contractor.

CONTRACTS PENDING

1000 tons, assembly plant, Ford Motor Co., Edgewater, N. J. general contract to Turner Construction Co.
825 tons, subway, section 10 ,route 107, New York.
700 tons, work for Missouri highway commission.
400 tons, filtration plant, Albany, N. Y.
360 tons, (additional), for superstructure, Buffalo city hall; John W. Cowper Co. general contractor.
325 tons, jail, Albany, N. Y.
317 tons, highway work, Imperial county, Sacramento, Calif. Bids Dec. 4.
235 tons, power house for Public Service Co. of Northern Illinois, at Waukegan, Ill.
150 tons, High school at Maywood, Ill.
130 tons, building for Illinois Bell Telephone Co., Aurora, Ill.
125 tons, for Los Angeles. Bids Nov. 19.
100 tons, National Town and Country club, Cleveland. Bids asked Nov. 26 by Thompson-Starrett Co., general contractor.

Rails, Cars

120,100 Tons Rails Awarded—More Pending—Car Inquiries Numerous—34 Engines Bought

ADDITIONAL rail orders take precedence over car awards in this week's railroad equipment markets. In excess of 120,000 tons was placed; 50,000 tons or more is up in two inquiries. Car inquiry remains heavy, though awards are lighter. Burlington doubled its automobile car inquiry. Union Tank Car placed 1000. St. Louis-San Francisco bought 20 locomotives.

RAILROAD TRACK PRICES, PAGE 1330

New York, Nov. 19.—Car buying in the local district is light although an improvement is expected shortly as a number of cars are actively pending. A leading inquiry involves 450 tank cars for Texas Co.

Approximately 13,700 freight cars are actively pending. Chesapeake & Ohio contemplates buying 5000; Virginian, 2000; Louisville & Nashville, a substantial number; and St. Louis-San Francisco has not yet distributed its 3823 assorted cars, according to leading carbuilders.

New York Central has entered the market for its next year's requirements of spikes, bolts, tie plates, and splice joints, bids to be opened Nov. 26. Indications are that quantities will be about 5 per cent in excess of this year's requirements. New York Central also will open bids Nov. 26 on 15 locomotives. Baldwin Locomotive Works closed on 21 locomotives, 20 being for St. Louis-San Francisco.

New York Central is understood to have exercised its option for additional rails. It placed 206,430 tons in October and it is reported the option permitted 30 per cent, or about 60,000 tons, additional.

Among eastern railroads expected in the market shortly for track accessories are the Erie, New York, New Haven & New Hartford, Lehigh Valley, Central Railroad of New Jersey and Delaware, Lackawanna & Western.

Part of the 1930 program of the Central Vermont railroad will be the purchase of 100-pound rails to replace 90-pound rails on 39 miles of trackage.

Boston & Maine announces a $3,000,000 improvement program including bridge rebuilding, grade crossing revisions and track replacements.

Pittsburgh, Nov. 19.—Specifications for track fastenings hold to a fair seasonal volume and make a better showing than most other descriptions of finished steel products. Business so far this month compares favorably with October. The market lacks large inquiries since all but a few roads have covered their 1930 requirements. Several smaller carriers in this district, and the Baltimore & Ohio railroad, have yet to enter the market. Both local car builders continue active with a fair volume of unfilled business on books. Light rails are quiet. Demand for relaying rails is not brisk.

Chicago, Nov. 19.—Three western roads placed a total of 120,100 tons of rails: Wabash, 23,000 tons; Rock Island, 57,100 tons; and Illinois Central, 40,000 tons. St. Louis-San Francisco may buy 30,000 tons this week. Producers here estimate that 1930 rail purchases will aggregate between 2,225,000 and 2,500,000, slightly heavier than that placed a year ago. Most western roads have filled their 1930 requirements; others have formal inquiries out. Rail mill operations were speeded up a few points, now averaging about 85 per cent. Finishing departments on accessories have heavier backlogs. About 15,000 tons was sold last week. From 20,000 to 25,000 tons are estimated to be on inquiry or about to come out.

In addition to the 3800 freight cars on inquiry for 1930, the program for St. Louis-San Francisco includes further requirements of freight and passenger equipment, the total expenditure with rails to be about $14.000,000, it is announced by J. M. Kerr, president. That road's additional equipment needs will include 38 standard freight cars, 20 baggage-and-mail and three dining cars. The bulk of the steel will be finished by western mills for the 1000 tank cars awarded by Union Tank Car Co. Western car builders have sufficient freight car business on account now to keep them well occupied for the remainder of the year.

CAR ORDERS PLACED

Great Northern, two dining cars, to Pullman Car & Mfg. Corp.
North American Car Corp., five tank cars, to American Car & Foundry Co.
Union Tank Car Co., 1000 tank cars, to American Car & Foundry Co.

LOCOMOTIVE ORDERS PLACED

Illinois Terminal Co., one electric locomotive, to St. Louis Car, General Electric, Buda and Exide Storage Battery companies.
Kentucky & Indiana Terminal Co., eight switch engines, to Lima Locomotive Works..
Michigan Central, four oil-electric locomotives, to American Locomotive, Ingersoll-Rand, and General Electric companies.
St. Louis-San Francisco, 20 Mikado type locomotives, to Baldwin Locomotive Works.
Texas-Southeastern, one freight locomotive to Baldwin Locomotive Works.

RAIL ORDERS PLACED

Illinois Central, 40,000 tons: 25,000 tons to Tennessee Coal, Iron & Railroad Co.; 10,000 tons to Inland Steel Co.; and 5000 tons to Illinois Steel Co.
Rock Island, 57,100 tons: 39,200 tons to Illinois Steel Co.; 6900 to Inland Steel Co.; and 11,000 to Colorado Fuel & Iron Co.
Wabash, 23,000 tons, of which 11,000 tons went to Illinois Steel Co. and the remainder to Inland Steel Co. and Bethlehem Steel Co.

CAR ORDERS PENDING

Chicago, Burlington & Quincy, 500 50-ton automobile cars, in addition to 500 40-ton automobile cars, on inquiry since Oct. 26.
New York Central, 12 rail motor cars.
St. Louis-San Francisco, 300 underframes and 300 superstructures.
Texas Co., 450 insulated tank cars, 300 of which will be 10,000-gallon and 150 of which will be 12,000-gallon capacity.

LOCOMOTIVE ORDERS PENDING

New York Central, 15 locomotives, bids to be opened Nov. 26; five are for Boston & Albany.
Southern Pacific, one locomotive; this is in addition to 39 reported in last week's issue.

RAIL ORDERS PENDING

St. Louis-San Francisco, 30,000 tons.

Stainless Steel Demand Requires Expansion

Current output of stainless steel at Central Alloy Steel Corp., Massillon, O., is the highest since production of the new material was started under Krupp license, it is announced by F. J. Griffiths, chairman. Notwithstanding larger production, deliveries of stainless are from six to nine weeks behind orders. Demand has been increasing rapidly with the development of new markets in the automotive, pipe, building and miscellaneous lines.

In order to supply demand for stainless, the company is expanding production facilities as rapidly as possible. Latest steps in the expansion program include installation of an automatic pack furnace, five double cabinets and blasting machines, a double tank mechanical pickling machine and a 2500 cubic foot air compressor. In addition, a new 25-ton electric furnace is being constructed. Completion of improvements around the first of the year will enable the company greatly to increase production.

Tractor Sales Decline

Washington, Nov. 19.—October shipments of electric industrial trucks and tractors declined from September but were nearly three times October, 1928, according to the department of commerce. Monthly comparisons follow:

	Domestic Tractors	All other Types	Exports
1928			
October	5	109	20
Total (10 mos.)	87	972	122
November	9	117	6
December	10	126	17
1928 Total	106	1,215	145
1929			
January	4	129	19
February	10	121	3
March	14	187	10
April	12	169	13
May	28	174	9
June	17	168	16
July	18	145	5
August	15	129	10
September	21	*132	7
October	14	123	32
Total (10 mos.)	153	1,477	124

*Revised.

Wire

Prices Appear Firmer While Demand Remains Slow—Contracting Lags—Nails Continue Slack

SPECIFICATIONS for wire and nails are lower in November than in October. Manufacturers' wire, which held up well for many weeks, is reflecting general conditions and is less active. First quarter prices being unchanged consumers are slow to contract. Some shading is said to be possible but in general prices are holding at established levels. Nails continue weak and lack demand.

WIRE PRICES, PAGE 1330

Pittsburgh, Nov. 19.—Producers of wire products report an improved situation in prices, with current quotations firmer than for several weeks. Business shows no improvement and specifications for the first half of November fell below the corresponding October period. Nails are quiet and although demand for manufacturers' wire is in fair volume, this grade reflects the general decline in activity. With prices unchanged for first quarter, buyers are in no hurry to contract. The current market continues 2.40c for plain wire and $2.40 to $2.50 for wire nails.

Worcester, Mass., Nov. 19.—Little change is apparent in the wire market. Production is at 85 per cent of capacity but shipments are keeping pace with production and diversified demand is holding schedules well.

Cleveland, Nov. 19.—Demand for wire and wire nails is at low ebb. Some nut, bolt, rivet, cap and set screw makers are placing fairly large specifications. One manufacturer in this line reported he had a 2.30c price on wire but placed his business with his regular source of supply at 2.40c. Jobbers occasionally buy mixed carloads of nails at $2.40. The American Steel & Wire Co. has booked a contract with the L. A. Young Spring & Wire Corp., Detroit, for 1500 tons of wire for automobile seat springs.

Chicago, Nov. 19.—While new tonnage in wire products is light, specifications from jobbers and retailers are in good volume, as favorable weather has contributed to moderate buying of agricultural wire products. Manufacturers' wire continues to decline. Nails continue decidedly slow. The market is reported holding at 2.45c, Chicago or western mills, for bright plain wire, and $2.45 to $2.55 for wire nails. Operations of western wire mills are 55 to 60 per cent.

Philadelphia, Nov. 19.—Nails continue easy in price. The usual figure of $2.40, base, Pittsburgh, is occasionally shaded by $1 per ton.

Cold Finished Steel

Specifications and Shipments Show Decline from October

COLD FINISHED PRICES, PAGE 1330

Pittsburgh, Nov. 19.—Specifications and shipments of cold finished bars show a decline from a month ago and the outlook for improved demand from automotive interests has been dimmed further. Cold bar producers look for little upturn in buying from that direction the remainder of the year. In one or two instances, however, some tonnage still is being taken. The market is 2.20c, Pittsburgh.

Cleveland, Nov. 19.—Cold bar finishers continue to report a dearth of specifications from the automotive industry. Various other consuming lines take fair sized tonnages, comparable with normal consumption. Nothing lower than 2.20c, Cleveland, has been uncovered. The impression is gaining ground that an effort will be made to increase that price by $2 per ton for first quarter, provided business improves before the trade opens the books for that period.

Modifies Trade Ruling

Washington, Nov. 19.—Federal trade commission has reconsidered and modified a rule adopted by the reinforcing steel fabricating and distributing industry in its recent trade practice conference. The rule is in group 2 originally accepted by the commission as an expression of the trade. It is rule 8, group 2, changed to read as follows: "The industry approved the practice of each individual member of the industry independently publishing and circulating to the purchasing trade his own price lists." The rule formerly provided for circulating individual members' current price list, notices of advances, declines or other changes in price.

Ex-Cello-O Aircraft & Tool Corp., Detroit, has increased capital from 300,000 to 500,000 shares.

Strip

Slow Demand Gives Mills only Part Operation—Shading Is Met in Some of the Markets

LACK of automotive tonnage is the largest factor in slowing the strip steel industry, as this outlet is by far the largest. Announcement that first quarter prices will be the same as the fourth quarter has not stimulated covering. Prices in most districts are firm at established levels but some concessions are reported. Pittsburgh mills are at 40 to 50 per cent.

STRIP PRICES, PAGE 1330

Pittsburgh, Nov. 19.—Business in hot and cold-rolled strip steel generally continues slow, marked by an occasional order for a fair sized tonnage. Recent orders show slight improvement. Consumers are showing only slight interest in first quarter tonnage although producers have announced that business will be taken on the basis of current quotations of 1.90c and 2.00c, Pittsburgh, for hot strip, and 2.75c for cold-rolled strip. Producers claim these quotations are firm on current business. Operations have been further reduced, with the average of 40 to 50 per cent of capacity.

New York, Nov. 19.—Although business is relatively quiet, strip prices are unchanged. Hot rolled strip continues 1.90c to 2.00c, Pittsburgh, depending upon width, and cold-rolled at 2.75c. Hot strip deliveries are about two weeks, and cold strip, two to three weeks.

Youngstown, O., Nov. 19.—While orders from the automotive industry have declined, sufficient business is being placed by the agricultural implement and plating industries to support operations at 60 per cent. Hot strip is quoted at 2.00c, Pittsburgh, for stock up to 6 inches wide, and cold-rolled hard coils 16 inches wide at 2.75c, Pittsburgh.

Cleveland, Nov. 19.—Some strip mills now do not start until Wednesday. By the middle of each week, enough business accumulates to warrant part time operation. Miscellaneous consuming lines are fairly active but their total consumption is far from comparable with automotive. Price concessions of $1 or $2 per ton under the quoted market levels here—2.75c, Cleveland, on cold and 1.90c to 2.00c, Pittsburgh on hot—are current in nearby territories but those quotations continue to be named here.

Chicago, Nov. 19.—Hot-rolled strip operations are about 70 to 75 per cent, while cold strip mills are operating at 55 to 60 per cent. A western automotive frame maker has put in a moderately heavy order for tonnage. Prices are reported to be unchanged.

Nonferrous Metals

Lead Sales Are Active and All Prices Remarkably Steady — Demand for Copper, Zinc, and Tin Continues Light

Prices of the Week. Cents a Pound

	Copper — Electro delivered	Copper — Lake delivered	Copper — Casting refinery	Straits Tin — New York Spot	Straits Tin — New York Futures	Lead — New York	Lead — East St. Louis	Zinc — St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
Nov. 13	18.00	18.10	17.00	39.37½	39.87½	6.25	6.10	6.25	23.90	8.50	35.00
Nov. 14	18.00	18.10	17.00	40.00	40.50	6.25	6.10	6.25	23.90	8.50	35.00
Nov. 15	18.00	18.10	17.00	39.87½	40.37½	6.25	6.10	6.25	23.90	8.45	35.00
Nov. 18	18.00	18.10	17.00	40.12½	40.62½	6.25	6.10	6.25	23.90	8.50	35.00
Nov. 19	18.00	18.10	17.00	39.87½	40.37½	6.25	6.10	6.25	23.90	8.62½	35.00

NEW YORK, Nov. 19.—Lead sales have been active in the past week but other nonferrous metal trading has been quiet. Prices have been remarkably steady.

Shipments of metals are lighter, with automobile and radio operations curtailed and new purchases of all classes of goods retarded. Production of metals is being curtailed to balance with current needs. This is especially true in lead and zinc, and it is understood something is being done in copper. Rumors have indicated that similar action would be taken in tin.

Brass and copper mill products are in a slow market. Copper wire retains its leadership among all nonferrous metal products with well sustained deliveries except from some factories specializing in wire for radio and automobile production. Present conditions in the electrical industry favor copper above most other commodities. Brass mills have had to curtail operations in about the same fashion as steel mills.

Copper—Prices remain firm though there is almost no domestic buying and only moderate export demand. Shipments still are of fair size, and users are holding off on additional orders. Producers are in a strong cash position and it is believed by many observers that the price will be held at the current level for many weeks. The policy of producers in the past year has been well established to adjust production to consumption as quickly as possible and it is believed they will continue in this way to support the price. Average daily rate of world copper production declined 67 tons last month from the average rate maintained during September.

Zinc—Prime western sales have been very light. Most producers are firm at current base prices. Some metal has sold at 2½ to 5 points under prevailing quotations but there is less shading now than a week ago. Producers believe buying will pick up at an early date. High grade zinc is quoted at a variety of prices, some interests holding to 8.00c, delivered, but some metal is still available at 7.40c.

Tin—Limited buying of nearby Straits has been done every day but the market as a whole has been quiet. No change has taken place in the statistical relation of production to consumption, and most factors in the market still hesitate to assume much position, long or short.

Lead—Buying by domestic users has been of good size, mostly for December shipment. The market appears decidedly firm.

Aluminum—New business is light but prices are firm.—*Daily Metal Trade.*

Mill Products

Base price cents per pound f.o.b. mill, except where otherwise specified

SHEETS	
Yellow brass (high)	23.25
Copper, hot rolled	27.75
Lead, full sheets (cut ½c more)	10.00
Zinc sheet (100-pound base)	$10.50
Zinc strip (100-pound base)	$9.50
Aluminum, flat sheets, up to 10 gage, 3 to 72 inches wide	31.30
SEAMLESS TUBE	
Yellow brass (high)	28.25
Copper	29.25
RODS	
Yellow brass (high, full turnings)	21.25
Naval brass	24.00
WIRE	
Copper	19.87½
Yellow brass (high)	23.75

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	11.00 to 11.50
Chicago	11.50 to 11.75
Cleveland	10.50 to 11.00
St. Louis	12.00 to 12.50
HEAVY YELLOW BRASS	
Cleveland	7.50 to 8.00
HEAVY COPPER AND WIRE	
New York	14.25 to 14.50
Boston	13.75 to 14.25
Chicago	13.00 to 13.25
Cleveland	12.50 to 13.00
St. Louis	11.50 to 12.00
RED BRASS BORINGS	
New York	10.50 to 11.00
YELLOW BRASS TUBING	
Cleveland	7.00 to 7.50
LIGHT COPPER	
New York	12.25 to 12.50
Chicago	11.75 to 12.00
Cleveland	11.00 to 12.00
St. Louis	11.50 to 12.00
LIGHT BRASS	
Boston	6.50 to 6.75
Chicago	6.75 to 7.00
Cleveland	5.50 to 6.00
St. Louis	7.00 to 7.50
ZINC	
New York	3.00 to 3.25
Cleveland	2.75 to 3.00
St. Louis	3.50
ALUMINUM	
Clippings, Cleveland	14.00 to 15.00
Borings, Clevealnd	8.50 to 9.00
Cast, Cleveland	10.50 to 11.00
Cast, Boston	10.50 to 11.00
Cast, St. Louis	12.25 to 12.50

Secondary Metals

Remelt aluminum No. 12	17.00 to 17.50
Brass ingot, 85-5-5-5	15.50 to 15.75

Coke By-Products

Some 1930 Contracting Done—Cut Sulphate for Export

New York, Nov. 19.—Demand for light oil distillates continues brisk for this period and some contracting for next season is done at unchanged prices. Buyers are contracting for toluol and commercial xylol in fair volume and some advance buying also has been noted for benzol at prevailing quotations. The new season will open with little material on hand. Export trade in benzol is fair.

Most phenol moving is around 17.00c, although it is reported some material from the midwest has reached this market for sale at 16.00c. Local distributors, however, are firm at 17.00c to 18.00c.

Naphthalene is quiet. Contracting season is at hand, but as yet little has been done for next season's requirements. Stocks are being accumulated for expected brisk spring demand. Prices are unchanged and this situation in this market is likely to continue until the turn of the year.

Sulphate of ammonia prices are weak. Some business is being done at $2.10 per 100 pounds. Export demand is better than domestic, but at the expense of price.

Coke By-Products

Per Gallon at Producers' Plant in Tank	Lots	Spot
Pure Benzol		$0.23
90 per cent benzol		0.23
Toluol		0.40
Solvent naphtha		0.30
Commercial xylol		0.30
Per Pound at Producers' Plants in 250-Pound Drums		
Phenol	0.17 to	0.18
Per Pound at Producers' Plants		
Naphthalene flakes	0.04½ to	0.05½
Naphthalene balls	0.05½ to	0.06½
Per 100 Pounds Delivered		
Sulphate of ammonia	$2.10 to	$2.20

Quicksilver Is Steady

New York, Nov. 19.—Quicksilver is steady to firm at $124.50 a flask though quiet.

Warehouse

Demand and Prices Recede—Sheets Down at New York—November Tonnage Below October Rate—Small Lot Buying Prevails

RECESSIONS in demand are accompanied by recessions in price in some warehousing centers. Black and galvanized sheets declined $2 at New York. Occasional shading is encountered at Pittsburgh. Prices are unchanged at Cincinnati but demand is much lower.

New York—Leading jobbers reduced listed quotations on black and galvanized sheets 10 and 25 cents per 100 pounds, respectively. They now quote black at 3.90c and galvanized at 4.50c. The market on these products has been unsettled for some time, with substantial concessions being offered under listed quotations in many instances. Prices otherwise are unchanged, with the general trend of business slightly downward.

Philadelphia—Jobbers here are doing a fair business, volume being only slightly less than the October average. The price situation is the firmest it has been in months, with Philadelphia prices and quantity differentials prevailing throughout eastern Pennsylvania, southern New Jersey, Delaware and Maryland, outside of Baltimore.

Buffalo—Warehouses are making iron and steel sales in harmony with reduced demand, now general. The quarter is holding up fairly well compared with the same period of 1928 and aggregate volume will undoubtedly be satisfactory.

Pittsburgh—Orders are in fair number but tonnage is slightly smaller. Aggregate business still compares favorably with the October rate. Prices are fairly steady but reports of shading are heard occasionally on some products, especially sheets. Wire and nails hold to the lower levels attained a short time ago.

Cleveland—Iron and steel demand out of warehouse reflects a marked decline in industrial activity. Some jobbers reduced their workday to nine hours, after operating on a 10-hour basis for several months. While no decided pickup in demand is expected before 1930, jobbers believe present prices will hold.

Cincinnati—Jobbers report business so far in November under that of October. Shrinking demand is affecting all lines carried. Mill competition is no more extensive than usual. Prices continue unchanged.

St. Louis—Business with the iron and steel warehouses is contracting. All buyers, particularly those using large tonnages, exhibit caution, taking only what is actually needed.

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Ft. Worth	3.75c
Houston	3.00c
Los Angeles	3.30c
New York†††‡	3.25c
Philadelphia*	2.80c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.04c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
Ft. Worth	3.75c
New York††	2.80c to 3.24c
Philadelphia*	2.80c
St. Louis	3.15c
Tulsa	3.75c to 4.04c

REINFORCING BARS

Baltimore	3.31c
Boston	3.265c to 3.50c
Buffalo	2.95c
Chattanooga	3.25c
Cincinnati	3.15c
Cleveland	2.25c to 2.44c
Detroit	2.30c to 3.00c
Ft. Worth	3.50c
Houston	3.00c
Los Angeles cl	2.40c
Los Angeles lcl	2.70c
New York	2.90c to 3.30c
Philadelphia	2.77c to 2.92c
Pittsburgh	2.90c to 3.175c
San Francisco cl.	2.30c
San Francisco lcl.	2.60c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Ft. Worth	4.00c
Houston	3.25c
Los Angeles	3.30c
New York†††‡	3.15c to 3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.14c

PLATES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.10c
Ft. Worth	4.00c
Houston	3.00c
Los Angeles	3.30c
New York†‡	3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	2.75c to 4.14c

NO. 10 BLUE ANNEALED

Baltimore	3.60c
Boston 3/16-in.	3.915c
Buffalo	3.50c
Chattanooga	3.75c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.25c
Detroit	3.35c
Ft. Worth	4.50c
Houston	3.90c
Los Angeles	4.00c
New York†‡	3.50c to 3.90c
Portland	3.75c
Philadelphia*†	3.25c
Pittsburgh**	3.35c to 3.45c
San Francisco	4.00c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.75c
Tulsa	4.20c to 4.34c

NO. 24 BLACK SHEETS

Baltimore*†	3.75c
Boston	4.85c
Buffalo	4.20c
Chicago	4.05c
Cincinnati	4.05c
Cleveland***	3.75c to 3.90c
Detroit	3.95c
Ft. Worth	4.70c
Los Angeles	4.90c
New York	3.90c
Philadelphia*†	3.90c
Pittsburgh**	3.85c
Portland	4.90c
San Francisco	5.00c
Seattle	5.00c
St. Louis	4.25c
St. Paul	3.89c
Tulsa	4.34c

NO. 24 GALVANIZED SHEETS

Baltimore*†	4.50c
Boston	5.60c
Buffalo	4.70c to 4.85c
Chicago	4.90c
Cincinnati	4.90c
Cleveland***	4.60c to 4.75c
Detroit	4.75c
Ft. Worth	5.50c
Houston	5.40c
Los Angeles	5.30c
New York	4.50c
Philadelphia*†	4.65c
Pittsburgh**	4.85c to 4.95c
Portland	5.50c
San Francisco	5.40c
Seattle	5.50c
St. Louis	5.10c
St. Paul	4.68c
Tulsa	5.10c to 5.35c

BANDS

Baltimore	4.00c
Boston	4.015c to 5.00c
Buffalo	3.65c
Chattanooga	3.45c
Chicago	3.20c
Cincinnati	3.50c
Cleveland	3.25c to 3.65c
Detroit 3/16-in. and lighter	3.30c
Ft. Worth	4.25c
Houston	3.65c
Los Angeles	4.15c
New York†‡	3.75c
Philadelphia*	3.30c
Pittsburgh	3.25c
Portland	4.00c
San Francisco	3.75c
Seattle	4.00c
St. Paul	3.50c
Tulsa	4.50c to 4.69c

HOOPS

Baltimore	4.00c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	3.75c
Cincinnati	4.05c
Cleveland	3.25c to 3.65c
Detroit, No. 14 and lighter	3.80c
New York†‡	4.25c
Philadelphia*	3.55c
Pittsburgh	4.25c
Seattle	5.00c
St. Paul	4.00c

COLD FINISHED STEEL

	Rounds, Falts, hexagons, squares	
Baltimore (c)	3.50c(a)	4.00c
Boston	3.55c	4.05c
Buffalo	3.95c	4.45c
Chattanooga*	3.85c	4.35c(d)
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles (a)	4.50c	
New York	3.50c	4.00c
Philadelphia*	3.50c	4.00c
Pittsburgh	3.70c	4.20c
Portland (a)	4.50c	
San Fran. (a)	4.25c	
Seattle (a)	5.00c	
St. Paul (a)	3.85c	
Tulsa	4.64c	5.14c

(a) Rounds only; (d) Squares only.

COLD ROLLED STRIP

Boston, 0.100-inch, 500 pounds lots	5.30c
Buffalo	5.85c
Chicago (b)	6.10c
Cincinnati	7.15c
Cleveland (b)	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia (c)	5.15c

(b) Net base, straightening, cutting, boxing 1 ton or more. (c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL

New York duty paid

Hollow drill steel	13.00c
Iron bars, round	6.10c
Iron bars, flats and squares	6.50c

*Plus quantity differentials. ‡Minus quantity differentials. ††Domestic bars. **Less than 25 sheets. *†50 or more bundles. ***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time

Pacific Coast

Sales Holding Well for Late Season—Canada Buying Considerable Material

ACTIVITY in Canadian steel markets is a feature of the Pacific coast trade. Railroads have placed considerable tonnages for improvements in British Columbia and other work is under way or pending. Exporters are competing with local consumers for scrap material. Southern Pacific railroad has placed a large tonnage of track fastenings but its rail requirements are unplaced.

Seattle, Nov. 13.—Interest in iron and steel products is well maintained in the Pacific Northwest despite the lateness of the season. Several important projects involving steel are scheduled for award before the end of the year.

Steel plants at Vancouver, B. C., are well supplied with work for structural and steel pipe projects. Official announcement of the award of about 7000 tons of shapes for the Canadian National Railway hotel at Vancouver is expected daily, although it is reported that the contract will be awarded the Dominion Bridge Co.

Pig Iron and Coke

Foundry operations are slack and new work is lacking. No improvement is expected until late January. Plants are generally well stocked and there is little buying. A shipment of Burn India iron is due to arrive. This grade is quoted at $26 here. Columbia is unchanged in price and is being purchased in small lots. Tyneside coke is quoted at $13.75 and Victoria at $14.50, these prices representing an increase of 50 cents to $1, due to higher ocean freights.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	25.00 to 26.00

*C.i.f. duty paid.

Bars, Plates and Shapes

The United States Intercoastal conference has announced that present water freights on iron and steel products will be maintained through 1930. The basic rate is 35c per hundredweight, with differentials for various items.

Mill prices of bars, shapes and plates are unchanged at 2.35c, although there is an apparent weakness in plates. Reinforcing materials are steady at 2.30c.

No reinforcing sales of more than 100 tons were reported this week although both local mills are taking on considerable business in car lots. Operations are unchanged but specifications are less important. Several general contracts have been awarded calling for reinforcing, the subcontracts being pending. These include 400 tons for the Port of Tacoma elevator, 325 tons for the Lake Cushman power house and 100 tons for a state bridge in Okanogan county.

Vancouver Engineering Works is constructing several large tanks for the B. C. Wood Preserving Co., involving 400 tons of plates. The same firm is building a ball mill, requiring 150 tons of plates, for the Granby Consolidated Mining Co. The same plant is making good progress on its contract for fabricating 50,000 feet of 26 to 32-inch steel pipe for the Greater Vancouver water district, involving 3000 tons. This pipe is all electrically welded, for which process the plant was recently remodeled.

The Dominion Bridge Co. Ltd., Vancouver, B. C., has completed fabrication and erection of 2200 tons of shapes in the Marine building at Vancouver. This job was done in record time. The same plant has booked 1800 tons for the Royal Bank of Canada's new office at Vancouver and is expected to close for 7000 tons for the Canadian National hotel at Vancouver. The Western Bridge Co. Ltd., Vancouver, is completing 460 tons for the Spence bridge over the Thompson river and 300 tons for the Capilano river bridge. This plant has booked 100 tons for the frame for an addition to the brewery plant at New Westminster, B. C. Structural jobs pending in British Columbia include at least 3000 tons for the proposed power plant at Jordan river for the British Columbia Electric Co. and 400 tons for the pier improvements at Vancouver for the Canadian National railway.

Seattle forge plants have recently booked considerable business in pipe bands. The Pacific Coast Forge Co. has a contract for furnishing the Union Pacific system with 1000 tons of track spikes and 350 tons of track spikes for the Northern Pacific railroad. Pacific Coast Steel Co. is manufacturing 2700 tons of tie plates for the Northern Pacific railroad.

Finished Materials

Mill buying is inactive but wholesale jobbers report business normal for the season. Turnover of sheets in October was heavier than for several months. Light plates ar in good demand, especially for tank and boiler work. Mill prices of shafting were recently reduced 10.00c but local warehousemen state jobbing prices are unchanged.

Old Materials

Keen competition between exporters and local mills has resulted in a slightly firmer tone for steel scrap. Desirable tonnages are easily sold. Local mill prices range unchanged at $10 to $11, gross, with buyers less discriminating as to quality. Mill stocks are increasing here. Buyers for export houses are especially active at Vancouver, B. C., and Portland where freight charges handicap Seattle mill buyers. Cast iron scrap is unchanged at $13, net, foundries showing little interest, as their present requirements are restricted. Sales are in small lots and the market is not strong.

Shape Tonnage Is Large

San Francisco, Nov. 16.—(*Via Air Mail*)—Movement of iron and steel products on the Pacific coast is holding up well. Structural steel shapes were the most active this week, close to 7000 tons being booked compared with 3600 tons for the weekly average for the year. Cast iron pipe and reinforcing bar bookings were exceptionally light. The feature of the week was the placing of a large tonnage of track fastenings by the Southern Pacific Co.

Pig Iron and Coke

Little improvement in demand for foundry pig iron and coke is noted and dealers look for little real business the remainder of the year as stocks in foundry yards are sufficient to take care of present requirements. Prices remain unchanged.

Bars, Plates and Shapes

Awards of concrete bars did not exceed 700 tons. This compares with 1612 tons for the weekly average. W. C. Hauck & Co. took 100 tons for an apartment house on Union street, San Francisco. Out-of-stock prices continue unchanged at 2.30c, base, on carload lots and 2.60c on smaller tonnages in the bay district. Los Angeles quotations are 2.40c and 2.70c, base respectively.

Bids on a pipe line at Oakland have been opened. Prices remain weak, desirable lots bringing from $2 to $3 a ton under the 2.35c, c.i.f. price.

The structural shape market continues active and awards were the heaviest in nearly two months. The Minnesota-Moline Power Implement Co. took 738 tons for the Shasta River bridge in California. McClintic-Marshall Co. took 185 tons for an office buiding in Bakersfield, Calif., and 150 tons for an apartment on Sixteenth avenue, San Francisco. The Consolidated Steel Corp. secured 175 tons for a warehouse for Crane Co., Los Angeles, and the Judson-Pacific Co. booked 120 tons for a telephone building in Bakersfield. Pending business is of fair proportions. Plain material continues unchanged at 2.35c c.i.f. Fabricated and in place prices in the San Francisco are by no means firm and one project this week, which ordinarily would bring $80 a ton went for better than $68 a ton.

The Southern Pacific Co. has placed 14,000 tons of tie plates, 4000 tons of track spikes and 390 tons of track bolts with unnamed interests. This company has not yet taken action on its inquiry for 120,000 tons of rails.

Oppose Proposed Rise in Graphite Duty

Manufacturers of foundry facings and crucibles and users of graphite and plumbago are exercised over changes in the duty on amorphous graphite, crystalline graphite and flake graphite which have been made in the tariff bill now before congress. Since 1921 duties of 10 per cent on amorphous graphite, 20 per cent on crystalline graphite and 1½ cents per pound on flake graphite have been imposed. In the tariff bill now in the making, the House changed the rate to 5 per cent on amorphous graphite, 25 per cent on crystalline graphite and 1¼ cents per pound on flake graphite. The senate changed the bill again to read 5 per cent on amorphous, 20 per cent on crystalline and 1¼ cents per pound on flake. On Nov. 1 Senator Black, of Alabama, offered an amendment to the bill already reported, bringing the rate on amorphous graphite to 10 per cent and classifying all other forms as crystalline graphite carrying a specific duty of 2 cents per pound. This amendment was adopted without debate.

Users of graphite feel that further consideration should be given to the item. They declare that graphite from Ceylon and Madagascar used in the manufacture of crucibles and foundry facings has qualities not obtainable in domestic graphite. Studies made by manufacturers of crucibles and facings, they say show that the domestic graphite is not suitable for crucibles and facings. To obtain satisfactory products, manufacturers say they have been forced to import graphite, in the face of higher costs. They complain that the proposed increase in duty on graphite will raise the cost of crucibles and facings.

Planning Early Start on Bopp Steel Plant

Detroit, Nov. 19.—Construction of a plant for the newly-organized Bopp Steel Corp., to manufacture cold rolled strip here, will be started in less than two weeks, according to A. J. Bopp, president. Contracts for the mills, motors and annealing furnaces have been placed. The plant is to be located on a site owned by the company at Tireman avenue and the Pennsylvania railroad, and will be ready April.

Officers were elected at a meeting of stockholders here recently. They are: President, A. J. Bopp, formerly with Weirton Steel Co.; vice president, F. C. Smith, formerly with Fisher Body Corp.; secretary and treasurer, J. H. O'Hara, president of J. H. O'Hara Co. and Manistique Lumber & Supply Co.

Directors include officers and J. W. Gier, Motor Wheel Corp., Lansing, Mich., and H. L. Maher, formerly chief electrical engineer, Ford Motor Co. Eugene H. Meyer has been appointed superintendent of the cold-rolled strip mill. Mr. Meyer formerly was associated with Weirton Steel Co., Superior Steel Co., the American Tube & Stamping Co. and Great Lakes Steel Corp.

Shape Shipments Higher

Washington, Nov. 19.—October shipments of structural shapes increased substantially over September and were also higher than October a year ago, according to the department of commerce. Totals for the ten months also show a large gain as noted in the following monthly comparisons:

	New Orders			Shipments
	Actual tonnage	% of capacity	Computed tonnage	Computed tonnage
1928				
October	*217,454	*67	*257,950	319,550
Total (10 mos.)	.....	72	*2,798,950	2,252,250
November	203,760	63	242,550	273,350
December	207,499	64	246,400	281,050
Total (year)	.....	71	*3,287,900	3,126,200
1929				
January	227,103	71	273,350	281,050
February	a222,723	69	265,650	238,700
March	b296,343	93	358,050	277,200
April*	b277,926	87	334,950	300,300
May*	c284,319	89	342,650	311,850
June*	d286,953	90	346,500	292,600
July*	e291,125	91	350,350	304,150
August*	g300,140	95	365,750	342,650
September*	h258,984	*83	319,550	319,550
October	k265,472	89	342,650	354,200
Total (10 mos.)	.....	86	3,299,450	3,022,250

a Reported by 236 firms with a capacity of 320,900 tons.
b Reported by 235 firms with a capacity of 320,500 tons.
c Reported by 233 firms with a capacity of 319,450 tons.
d Reported by 232 firms with a capacity of 318,950 tons.
e Reported by 231 firms with a capacity of 318,750 tons.
g Reported by 225 firms with a capacity of 316,725 tons.
h Reported by 218 firms with a capacity of 313,255 tons.
k Reported by 180 firms with a capacity of 298,725 tons.
* Revised.

Trackwork Total Less

October shipments of trackwork for rail track of 60 pounds per yard or heavier was 12,902 net tons, according to the report of the American Iron and Steel institute. This compares with 12,962 tons in September and 9493 tons in October, 1928. This is somewhat below the average. In June the total was 14,838 tons and in May 16,333 tons.

Malleable Output Up

Washington, Nov. 19.—Although October production of malleable castings increased slightly over September it was lower than October, 1928. Ten months totals, compared with the same period last year, however, show a decided increase, according to the department of commerce. Monthly comparisons follow:

1928	Production net tons	Shipments net tons	Orders booked net tons	Per cent of capacity operated
Oct.	70,054	63,510	65,780	73.4
Tot., 10 mos.	656,489	637,520	638,044	68.5
Nov.	63,560	58,246	59,664	66.8
Dec.	59,428	56,867	61,182	63.4
Total, year....	779,477	752,733	758,890	67.9
1929				
Jan.	73,125	77,231	76,787	77.7
Feb.	73,875	71,093	77,976	77.1
March	83,365	81,063	86,744	87.7
April	83,765	80,999	80,808	87.8
May	81,704	80,534	76,927	83.8
June	72,282	72,378	65,247	75.0
July	70,625	69,665	61,401	73.5
Aug.	68,651	69,240	61,982	70.0
Sept.	59,589	63,049	52,957	62.0
Oct.**	60,165	52,092	58,051	62.4
Tot., 10 mos.	727,146	717,344	698,880	75.7

**Preliminary.

Pig Iron

(*Concluded from Page* 1331)

Philadelphia, Nov. 19.—Pig iron is slightly more active, mainly in small and moderate size lots. A pipemaker in this district placed a round tonnage. Eastern Pennsylvania foundry iron continues $21, base, furnace, and practically all business in the past week was on this basis. Some orders were placed for copper bearing low phosphorus on which the market continues $23 to $23.50, base, eastern Pennsylvania furnace. New inquiries incude small tonnages for the southern, Norfolk & Western, Baltimore & Ohio, and Lackawanna railroads.

Chicago, Nov. 19.—While pig iron shipments show little decrease from last month sales are mainly for spot delivery. Small tonnages have been placed for first quarter. It is estimated nearly 80 per cent of buyers now are taking tonnage on weekly or month to month shipping orders. Several mixed shipments of pig iron and finished steel have just been received by boat from the East. The base price is $20, Chicago furnace.

Birmingham, Ala., Nov. 19.—Unfilled tonnage with Alabama blast furnace interests is so large that effort is being made to move the iron before the end of the year. Spot orders are being placed mainly by local consumers, and in small lots. Some inquiries for basic are noted. A large amount of iron is due consumers in the East and Middle West. Quotations are firm at $14 to $14.50, base, Birmingham. It is generally understood that the reduced freight rate to the East, via rail and water, will apply for a while after March 31.

A mishap to the bottom of No. 2 city furnace of the Sloss-Sheffield Steel & Iron Co. caused that furnace to be put out of commission temporarily.

Toronto, Ont., Nov. 19.—Spot buying of pig iron is more active and total tonnage is above that of the preceding week. Shipments are fairly large. Prices are unchanged.

Railroad Heads Advise President Their Buying Will Be Maintained

WASHINGTON, Nov. 19.—The railroads will continue their construction and betterment programs without reference to the stock market, railroad executives told President Hoover at the White House today at the initial government-business conference designed to give reassurance to business following the stock market liquidation A statement issued at the conclusion of the conference follows:

The railway presidents were unanimous in their determination to cooperate in the maintenance of employment and business progress. It was stated that railways which they represented would proceed with full programs of construction and betterment without any reference to recent stock exchange fluctuations, that they would canvass the situation as to further possibilities of expansion and that among their particular railways it appeared that the total volume of such construction work already indicated an increase during the next six months over the similar period of last year.

It was agreed that the whole question should be taken up at the meeting of the railway executives meeting in Chicago next Friday with a view to securing co-operation of all railways in the United States in such a program. At that time steps will be taken to canvass the railways to determine the exact amount of construction and betterments which can be undertaken over the forthcoming year and during the next 6 months.

The railway executives felt that it was desirable that similar conferences should be called in other industrial groups and that some method of co-ordination of their different activities should be developed.

Although plans have been disarranged by the death of Secretary of War Good, executives of major industries, including iron and steel, are expected to hold conference with the President Thursday. Secretary of Commerce Lamont and Secretary of the Treasury Mellon will attend. Friday the President and the appropriate secretaries are slated to meet farm and national construction organization executives.

E. G. Grace, president, Bethlehem Steel Corp., and Myron C. Taylor, chairman of the finance committee, United States Steel Corp., will represent the steel industry at the Thursday conference. While no official announcement has been made at the White House up to the time of this writing, it is understood that the following have been invited to attend the Thursday conference: Henry Ford; Clarence Wooley, American Radiator Co.; Alfred P. Sloane, General Motors Corp.; Matthew Sloane, New York Edison Co.; Owen D. Young, General Electric Co.; Walter Gifford, American Telephone & Telegraph Co.; Julius Barnes, chairman of board, and William Butterworth, president, of the United States chamber of commerce, and others.

The building and the railroad situations are expected to receive special attention at the government-business conferences. The President is known to feel that no other industry cuts across to many sections of the business community as building, and any stimulus effective here will react favorably in almost all industries. In 1923, when secretary of commerce, Mr. Hoover presented a report urging that the construction of public buildings and that as many public projects as possible be held in reserve, to be thrown into the breach when business slacks. The recommendation of Secretary Mellon that government work costing $423,000,000 now proceed is in line with this thought.

The reduction of 1 per cent in federal taxes, both corporation and personal income, is expected to afford much relief. For an industrial the size of the United States Steel Corp. the saving in the 1928 corporation tax to be paid in 1929 is estimated at $1,750,000.

Still Chance for Changes in Metals Duties

Washington, Nov. 19.—While it is not considered likely that anything can be done about it, there still is a bare possibility that some changes may yet be made in the senate in connection with the metal schedule.

As the metal schedule was passed, the senate only has taken up committee amendments and it will later go back to any "floor" amendments that may be considered. Should some "floor" amendment be adopted changing the rate adopted by the senate, it would be the last word, but in view of the working of the coalition, it is not considered that anything will get by. It also has to be taken into consideration that present action is being taken by the committee of the whole and later action will be taken by the senate. However, when the committee of the whole has acted on a bill it is rare indeed that any changes are made when the bill gets in the senate.

At the time this is being written an effort is being made to finish with the agricultural schedule and then make all the rest of the bill exactly like the present law of 1922, or at least with a few possible exceptions. It is felt that the coalition has the votes to do this if it chooses. Should this be done there still is a chance, with the senate meeting from 10 a.m. to 10 p.m., as at present, to finish the bill in the upper house before the new session begins Dec. 2.

The twist drill paragraph of the metal schedule, as it passed the senate, reads as follows:

Par. 352. Twist and other drills, reamers, milling cutters, taps, dies, die heads, and metal cutting tools of all descriptions, and cutting edges or parts for use in such tools, composed of steel or substitutes for steel, all the foregoing, if suitable for use in cutting metal, not specially provided for, 50 per centum ad valorem; cutting tools of any kind containing more than one-tenth of 1 per centum of vanadium, or more than two-tenths of 1 per centum of tungsten or molybdenum, chromium, 60 per centum ad valorem. The foregoing rates shall apply whether or not the articles are imported separately or as parts or attached to machines.

Stoker Sales Higher

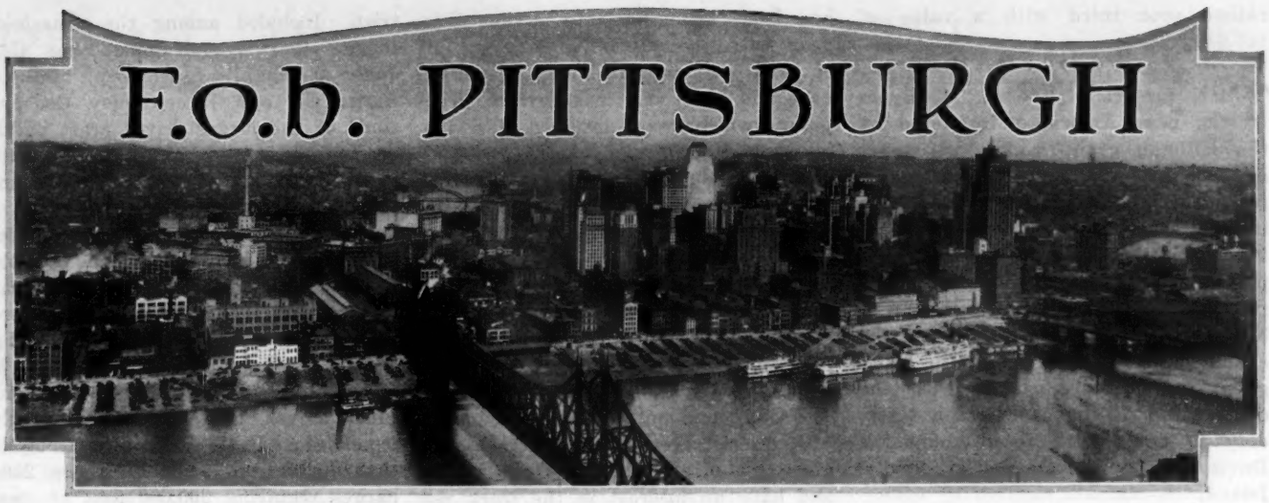
Washington, Nov. 19.—Mechanical stoker sales for October increased substantially over the preceding month and were also 78 per cent higher than October, 1928, according to the department of commerce. Monthly comparisons follow:

	Stokers sold	Fire tube boilers	Water tube boilers
1928			
October	100	48	52
Total (10 mos.)	1,272	459	813
November	116	54	62
December	102	34	68
Total (year)	1,490	547	943
1929			
January	97	36	61
February	80	26	54
March	117	42	75
April	141	41	100
May	174	64	110
June	203	82	121
July	186	88	98
August	199	94	105
September	*155	71	84
October	178	89	89
Total (10 mos.)	1,530	633	897

*Revised.

Drawback Is Extended

Washington, Nov. 19.—A treasury decision issued Nov. 3, 1927, providing for the allowance of drawback on steel billets and bars manufactured by the Donner Steel Co., Buffalo, with the use of imported ferromanganese and ferrosilicon has been extended to provide for the use of imported nickel in the manufacture of said products.



Pittsburgh Retains Iron, Steel Title by Modernizing

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Coal Lands Pass to New Hands; Scan Ore Reserves

Pittsburgh, Nov. 19

OUTSHONE by the huge expansion program announced by the United States Steel Corp. for its western subsidiary, the Illinois Steel Co., new construction and improvement work in the iron and steel industry in the Pittsburgh and adjacent districts, nevertheless, has not been lagging this year. The largest individual item is the new seamless tube mill being built at McKeesport by the National Tube Co. at a cost of $20,000,000. Near Ambridge, Pa., the A. M. Byers Co. is nearing completion of its $10,000,000 plant for the production of wrought iron by the Aston process. At Johnstown, Pa., the Bethlehem Steel Co. is engaged in a $12,000,000 program consisting almost entirely of improvement and replacement work. President Grace recently announced that upon the completion of this project a new $10,000,000 project would be launched, including the construction of a new bessemer department and new open-hearth furnaces.

The Jones & Laughlin Steel Corp. is building 81 by-product ovens at Aliquippa, Pa., and the Pittsburgh Steel Co. has a $2,000,000 by-product plant under way. The Apollo Steel Co. is spending between $750,000 and $1,000,000 at Apollo, Pa., on the installation of new normalizing furnaces and the construction of a mill for the production of full-finished sheets. The latter project, scheduled for completion next spring, will result in an additional capacity of 4000 to 5000 tons of sheets monthly for the company, an increase of one-third over the present capacity. The Sharon Steel Hoop Co. completed a new 14-inch hot strip mill this spring. The West Leechburg Steel Co. spent $800,000 this year on a new 12-inch hot strip mill and other improvements. The Tarentum Steel Corp., a new concern, expects to have its $3,000,000 plant at Tarentum, Pa., in production of automobile sheets early next year. Follansbee Bros. Co. has completed a new sheet mill at Toronto, O. The American Sheet & Tin Plate Co. has made extensive improvements at nearby mills this year, particularly at the Vandergrift, Farrell and New Castle works. A large portion of the last named plant practically has been rebuilt. A new mill has been installed at the Mercer works at Farrell, and the tin house badly damaged by fire recently has been replaced. New heating furnaces have been installed at Vandergrift.

The recent and prospective program of construction in the Pittsburgh district contemplates no such extensive expansion of open-hearth and bessemer facilities such as is scheduled for the districts to the west. The replacement of old equipment will result in an improved efficiency, however, the net result of which means increased capacity. With the westward movement of population, economy naturally has dictated that producers keep adjacent to their consumers. There is no question, however, that the Pittsburgh district mills, because of their location with respect to coal and the rivers—the latter cheap mediums for transporting fuel from mines to mills—are firmly established and will continue to grow apace with the expansion in worldwide requirements of steel. As the United States develops to the west, Pittsburgh's percentage of total steel production of the country may be expected to decline slightly but the date of its eclipse as the steel center of the United States appears far deferred.

* * *

PITTSBURGH'S industrial expansion during the past 50 years largely has been the result of growth from within rather than from the introduction of new industries. The 1927 census of manufactures made by the government shows that from 1880 to that year the number of industrial establishments in Allegheny county increased from 1895 to 1912, a gain of only eight-tenths of 1 per cent, but that during the same period the number of employes per plant rose 208 per cent and the average annual wage increased 234 per cent, or from $454 to $1520. At the same time, the average value of manufacturing output per plant gained 1032 per cent, reflecting the use of improved methods and machinery.

In this growth the steel industry has played a prominent part. Of the $1,525,706,000 industrial output of Allegheny county for 1928, metal and metal products accounted for $1,139,895,600, or 74 per cent. It is interesting to note that food and kindred products ranked second with an output valued at $127,910,100, while chemicals and allied products were a

rather poor third with a value of $65,619,200.

* * *

THE project of the A. M. Byers Co. near Ambridge, instituted by the Hillman group which five years ago acquired control of the company, is one of two undertakings that have injected new life in two Pittsburgh industries that had dwindled in importance during recent years. Wrought iron was forced from the limelight by steel a generation ago, and merchant pig iron production in Allegheny county disappeared with the dismantling of the old Clinton stack, only to be revived recently by the Davison Coke & Iron Co. at Neville Island.

The Byers plant is scheduled for completion around the first of next year. Operations are expected to be started about March. This plant is to be used largely for the production of semifinished wrought iron, the only finished product to be made being plates. Pipemaking will be continued at the South Side plant of the Byers company, while arrangements will be made with various companies for the rolling of other finished products. The Sharon Steel Hoop Co., in which the Hillman group is a large stockholder, now is engaged in the production of wrought iron sheets.

Reports that were current some time ago that the Standard Seamless Tube Co. at Ambridge, a subsidiary of Spang, Chalfant & Co., which also is a Hillman interest, would produce seamless tubes from hot Aston iron have been denied. The Ambridge properties of Spang, Chalfant formerly comprised the plant of the Standard Seamless Tube Co., which Spang absorbed a few years ago and is occupied with the production of only seamless products. Welded pipe is made at the Etna, Pa., plant which dates back 100 years and is the oldest pipe mill in the United States. Although the production of seamless wrought iron pipe has not been wholly successful, experiments have been under way along this line for some time and it is possible that such a product will be commercially practicable in the near future. The Byers, Spang, Chalfant and Sharon Steel Hoop properties, in addition to the pipe distributing facilities of the Oil Well Supply Co., make Hillman one of the leading interests in a field that has been centralized rapidly as the result of mergers over the past few years, both in the pipe industry and the steel industry as a whole.

The Davison Coke & Iron Co. project at Neville Island, representing with its Sharpsville, Pa., blast furnace an investment of $12,000,000, has been swinging into action this year with the successive starting of operations of cement kilns, blast furnace and by-product coke ovens. The plant, which was designed for the economic consumption of the gas and slag by-products of the blast furnace, also has the advantage of access to the Ohio river for cheap transportation. Cement is being hauled in specially designed barges and 20 open barges recently were bought for the movement of coal and in instances, pig iron.

* * *

MOST steel mills in the Pittsburgh district are adjacent to the Allegheny, Monongahela or Ohio rivers and have an interest in the work recently completed on locks and dams in making the Ohio river navigable its entire length to Cairo, Ill., nearly 1000 miles away, where it joins the Mississippi. Traffic now will be uninterrupted 12 months of the year in contrast to the former situation when periods of low water made barge movement impossible. This work, which involved an expenditure of about $125,000,000 over the past 50 years, has little effect on the major use to which steel mills place the rivers—the transportation of coal from the mines. Such traffic is heaviest on the Monongahela river, amounting in recent years to more than 20,000,000 tons annually. With the recent extension of navigable water down the Ohio, however, the movement of finished steel products has grown to substantial proportions, totaling 1,413,216 tons over an average haul of 242 miles in 1928. This year gives indications of setting a new high mark for the movement. The Jones & Laughlin Steel Corp. with a fleet of eight towboats and 215 steel barges, and the Carnegie Steel Co. with its facilities of 15 towboats and 451 steel barges, have been most active in utilizing river transportation. The Wheeling Steel Corp. also is advantageously located to benefit by water facilities and has been adding to its fleet this year.

Some of the smaller companies are not in a position to operate their own barges and boats but must depend upon the facilities of the public barge lines. These lines are enlarging their fleets but the demand for carriers has grown to proportions as to tax carrying capacity. Shipments recently were delayed in the Pittsburgh harbor due to the fact that no barges were available for the movement of southern terminals.

Renewed interest in river transportation has reacted to the benefit of barge builders, the bulk of which work is carried on in the Pittsburgh district. Included among the American Bridge Co., Dravo Contracting Co., Jones & Laughlin Steel Corp., Midland Barge Co. and Riter-Conley Co. are some of the largest river craft builders in the country. The year to date has been an active one for these companies and considerable business is in prospect for the future. The steel barge today has superseded the old wooden craft of years ago. Whereas in the years 1920, 1921 and 1922 there were 225 wooden barges built, during the succeeding three years only five were launched, while at the same time construction of steel hulls gradually expanded. It is estimated roughly that during the past ten years 2000 barges requiring 300,000 tons of steel have been built in the Pittsburgh district.

* * *

MORE attention is being given by steel producers to the obtaining of sufficient reserves of raw materrial, particularly coal and iron ore. The inclusion of the Hanna properties in the Great Lakes-Weirton tieup, the sale by Shenango Furnace Co. of part of its ore lands to the Crucible Steel Co. of America, and the acquisition by the Weirton Steel Co. of the Isabella property of the Hecla Coal & Coke Co. have been recent developments in this line. The report that the United States Steel Corp. is dickering for a substantial portion of the coal acreage of the Pittsburgh Coal Co. has been current for many months and recently is understood to be nearing materialization. This deal is said to involve 32,000 acres of coking coal with a price of $2000 an acre. The Steel corporation has had an option on certain properties of the Washington Coal & Coke Co. for some time.

The Eaton group of Cleveland also is believed to be seeking coal lands in this district for the steel plants it is drawing together. This interest and the newly-formed National Steel Co. are mentioned in connection with a proposal made by the W. J. Rainey Co. to the Emerald Coal & Coke Co., a Julian Kennedy concern, asking for an option and purchase of the Emerald properties of 10,000 acres of coal land. The Rainey company is not regarded by some as the final buyer of this acreage.

* * *

DEMAND for alloy steels has been growing steadily over the past ten years, largely because of the improved mechanical properties of such materials compared with ordinary carbon steel and, consequently, their adaptability to certain uses. The development and need of steels resistant to corrosion give indication of con-

(*Concluded on Page* 1359)

British Pig Iron Demand Improves

Steel Mills in Some Districts Also More Active—Coal Shortage Feared—Political Developments in France Aid Domestic Business

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, Nov. 19.—(*By Cable*)—Pig iron demand is good in the Birmingham district. Middlesbrough blast furnaces report domestic business is fair, but exports are dull. The hematite output in the Barrow district has been sold up several months ahead, and prices are firm. Steel mills in the Barrow district also are active. Steel mills in Middlesbrough are receiving substantial orders due to new shipbuilding contracts.

The iron and steel trade in Glasgow is on a hand-to-mouth basis, and export demand is reported as slow. The market for Staffordshire finished iron has improved. Orders for galvanized sheets are lacking, while demand for tin plate is fair. Uncertainty in respect to coal supply is causing general anxiety in British industries.

The formation of a new cabinet in France has resulted in increased domestic business in the iron and steel markets, but export demand is quiet, according to a report from Paris. Improvement in Belgian markets noted last week is maintained. A report from Berlin states exports have become more active, while domestic trade is dull.

High Cost Fuel Limits British Steel Profits

BIRMINGHAM, Eng., Nov. 8.—(*European Staff Service*)—Midland pig iron producers maintain operations at a high rate to fill contracts but new business is small and consumers show no eagerness to replace contracts running out. The Central Pig Iron Producers association has decided to leave prices unchanged. Fuel is costly and there can be no hope of cheaper pig iron in these circumstances. Smelters are not making more profit although consumers think they are being imposed upon by present high prices. Steelmakers and finished iron makers particular are suffering severely as they are unable to recoup themselves by a higher selling price. Foundry iron

Sterling $4.88

is being consumed at light castings works as the building trade is active.

Middlesbrough pig iron makers are selling small quantities to home consumers at fixed minimum prices but the export trade is flat and shipments are about 3000 tons less than for the corresponding period of September. The east coast hematite makers are in better position, being fairly well placed for orders but they have long complained that the price does not show an adequate return and they have therefore declared an advance this week to £3 18s ($9.02) for mixed numbers.

The hematite trade in the Barrow district is firmly maintained and premiums of 1s (24 cents) per ton are being taken for prompt delivery. Some furnaces have sold their output to the end of the year and much of the iron is needed on the Continent. Home users are buying more freely special qualities for the making of high class steel.

Steel producers in all parts of the country are concerned at lack of new business. Producers are able to carry on but large users, such as structural yards and shipbuilders, are placing few contracts. Added to this is the severity of foreign competi-

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, November 18	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON	£ s d		£ s d		£ s d		£ s d	
Foundry No. 3, Silicon 2.50-3.00	$17.69	3 12 6*	$16.59	3 8 0	$16.59	3 8 0	$17.56	3 12 0
Basic-Bessemer	16.71	3 8 6†	16.59	3 8 0	16.59	3 8 0	16.84	3 9 0
Hematite, Phosphorus 0.02-0.05	18.79	3 17 0	24.82	630*	.....	.....	17.81	3 13 0
SEMIFINISHED STEEL								
Billets	$30.50	6 5 0	$22.45	4 12 0	$22.45	4 12 0	$22.45	4 12 0
Wire rods	41.48	8 10 0	31.11	6 7 6	31.11	6 7 6	30.50	6 5 0
FINISHED STEEL								
Standard rails	$40.26	8 5 0	$31.72	6 10 0	$31.72	6 10 0	$32.21	6 12 0
Merchant bars	1.74c	8 0 0	.94c	4 5 6	.94c	4 5 6	1.16c	5 5 6
Structural shapes	1.60c	7 7 6	1.09c	4 19 3	1.09c	4 19 3	1.09c	4 19 0
Plates, ship, bridge and tank	1.76c	8 2 6	1.38c	6 5 6	1.38c	6 5 6	1.38c	6 5 0
Sheets, black, 24 gage	2.17c	10 0 0	2.37c	10 15 0	2.37c	10 15 0	2.33c	10 12 0
Sheets, galvanized, 24 gage, corrugated	2.82c	13 0 0	2.87c	13 1 3	2.87c	13 1 3	2.97c	13 10 0
Bands and strips	2.17c	10 0 0	1.24c	5 12 6	1.24c	5 12 6	1.24c	5 12 6
Plain wire, base	2.06c	9 10 0	1.57c	7 3 0	1.57c	7 3 0	1.62c	7 7 0
Galvanized wire, base	3.04c	14 0 0	1.98c	9 0 0	1.98c	9 0 0	1.98c	9 0 0
Wire nails, base	2.39c	11 0 0	1.71c	7 15 0	1.71c	7 15 0	1.71c	7 15 0
Tin plate, base box 108 pounds	$4.64	0 19 0	.....	.....	.....	.....	$ 9.02	1 17 0

*Francs

Domestic Prices at Works or Furnace—Last Reported			Francs			Francs		Marks
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$17.69	3 12 6	$18.72	475(2)	$17.30	620	$20.32	85
Basic pig iron	16.71	3 8 6	20.09	510(1)	16.04	575	21.76	91
Furnace coke	4.39	0 18 0	6.61	168	5.86	210	5.14	21.50
Billets	31.11	6 7 6	24.43	620	24.83	890	28.93	121
Standard rails	1.79c	8 5 0	1.46c	810	1.63c	1,250	1.53c	140
Merchant bars	1.79c	8 5 0	1.32c	735	1.24c	955	1.54c	141
Shapes	1.76c	8 2 6	1.26c	700	1.20c	925	1.50c	138
Plates, ship, bridge and tank	1.93c	8 17 6‡	1.46c	815	1.46c	1,120	1.72c	158
Sheets, black, 24-gage	2.28c	10 10 0	2.79c	1,550	2.50c	1,920	2.45c	225
Sheets, galvanized 24 gage, corrugated	2.82c	13 0 0	3.55c	1,970	3.19c	2,450	3.81c	350
Plain wire	2.06c	9 10 0	1.94c	1,075	2.15c	1,650	2.45c	225
Bands and Strips	2.17c	10 0 0	1.46c	810	1.37c	1,050	1.79c	164

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 18s 0d ($4.39) f. o. b. Ferromanganese £21 13s 0d ($105.65) delivered Atlantic seaboard, duty-paid. German ferromanganese £15 0s 0d ($73.20) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

tion though it is true that this is most marked in semifinished.

Advices from the Continent do not indicate a definite reaction and in order to relieve the heavy stocks accumulating, French and Belgian works are considering drastic restriction of output. One seller was offering small steel bars at £6 6s ($30.74) delivered in the Black Country as compared with the price of £8 2s 6d ($39.64) quoted by the English works turning out rerolled steel. In neither case was there inclination to book substantial tonnages. English billet makers are anxious to avert stoppages at the works and are willing to accept £6 5s ($30.50) for 2-inch. But the foreigner offers billets at £5 11s ($27.08), delivered.

Heavy steel works are looking to the railway schemes promised by the four big groups in the way of electrification and improvement, and the electricity commissioners' proposals for more efficient power stations throughout the country are likely to find work for engineers and steel producers. The Barrow steel works maintain fair activity on rails, fish plates and sleepers. The steel position in Sheffield though a little brighter following the placing of transactions by South Africa for tires and axles, is still depressed. It is expected that automobile steel will be wanted shortly by reason of business booked at the motor show at Olympia. But there has been a lull in buying of tools and tool steels used by automobile works.

In the Staffordshire iron trade several grades of crown iron are higher but business is not brisk and it is difficult to stabilize all makes at this level. Marked bar mills are working regularly as there is a steady demand for this iron from engineers and municipalities, owing to its high quality. Iron strip is also selling steadily and chain and cable irons are in somewhat better request.

The weakest department is undoubtedly galvanized sheets and the low price of £13 ($63.44) quoted during the week has already been cut by 2s 6d ($0.60) in order to attract orders. The main source of anxiety is lack of export business and some firms have experienced improvement on substantial lines with home consumers.

Freight rates between England and Belgium via France are increased from today owing to local French charges. This is likely to affect the buying of continental products, especially in the Midlands, where prior to this advance a ton of steel bars cost £1 2s ($5.36) to bring from Antwerp to Birmingham.

More German Coke Ovens

The German steel trust, Dusseldorf, has recently placed in operation a number of batteries of coke ovens which had been idle for a considerable length of time, the department of commerce learns from Trade Commissioner James E. Wallis Jr., Berlin.

In this connection it is interesting to note that the total coke output of the German steel trust is now being produced from 27 coking plants comprising 65 different groups of ovens with a total of 3725 single ovens. Of the 27 coking plants, 19 are classed as small plants, 5 as large plants, and the remaining 3 are large central plants, each of which utilizes production of several coal mines.

Since its formation three years ago the German Steel Trust has built 894 new coke ovens with a total annual production of 5,000,000 tons, thus greatly strengthening its position on the European market.

It is understood that the administration of the Steel Trust contemplates the erection of 143 new coke ovens with an annual production of about 930,000 tons.

French Ore Declines

Paris, Nov. 8.—(*European Staff Service*)—Production of metallurgical coke at French collieries during September was slightly less than in August. Imports of coke in September were larger than in August. The September imports came mostly from Germany, which country shipped 304,405 tons, followed by Holland with 112,880 tons, Belgium with 58,232 tons, and Great Britain with 5255 tons. Exports of September exceeded those of August. September exports went mostly to Italy, Switzerland, Belgium and Luxemburg. Comparisons are as follows:

Mon. ave	Production	Imports	Exports
1913	335,620	255,835	17,085
1926	313,950	462,915	39,320
1927	339,015	395,580	33,430
1928	366,660	447,330	34,810
1929			
Jan.	384,519	438,059	37,443
Feb.	360,182	400,848	34,165
March	411,328	419,478	22,941
April	394,392	503,473	34,557
May	406,170	499,824	26,312
June	394,842	494,572	37,578
July	399,207	445,441	52,499
Aug.	398,828	428,405	37,029
Sept.	380,469	483,192	43,608

German Trade Lessens

Berlin, Nov. 5.—(*European Staff Service*)—Exports of pig iron, ferroalloys and other iron and steel products from Germany during September were much lower than in August. Among the principal items exported were: Merchant bars, shapes, hoops and bands, 115,690 tons; plates and sheets, 65,389 tons; railroad track material, 32,474 tons; wire rod and wire products, 31,636 tons; forged tubes, 23,956 tons; semifinished products, 22,490 tons; various forgings, 21,777 tons; scrap 11,392 metric tons.

The largest item imported was merchant bars, shapes, hoops and bands, 59,490 tons. The tonnage of scrap imported in September was 32,502 metric tons. The following table gives comparative figures, in metric tons:

	IMPORTS		EXPORTS	
Mon. ave.	Pig iron	Other iron and steel	Pig iron	Other iron and steel
1926	9,230	95,890	42,730	402,905
1927	23,895	217,505	29,910	347,645
1928	25,535	174,250	24,585	394,575
1929				
Jan.	22,334	154,293	31,820	387,769
Feb.	10,595	101,257	20,861	320,451
March	12,394	112,161	27,090	319,172
April	12,729	141,971	35,904	583,556
May	11,495	158,787	44,275	542,840
June	12,406	164,582	36,483	485,554
July	12,798	164,951	47,784	497,784
Aug.	11,382	154,019	45.968	473,601
Sept.	12,143	136,019	36,388	433,680

Bolckow Vaughan Net Up

London, Nov. 8.—(*European Staff Service*)—Profits of Bolckow, Vaughan & Co. Ltd. for the year ended June 30 were £351,981 ($1,710,000). After deducting standing charges on idle plant, bank and loan interests, and debenture interests, there remained a surplus of £136,928 ($665,000). This year's profits represent an increase of £69,667 ($337,000) over the previous year. Despite the improved position, no dividends are being declared.

French Steel Market Does Well In Spite of Export Difficulties

PARIS, Nov. 8.—(*European Staff Service*)—The situation of the French iron and steel market remains as good as can be expected at present in view of the serious difficulties which characterize the export market and the markets of continental producers. The hesitancy of customers and desire of producers to sell on the French market instead of exporting their output have weakened domestic prices. Moreover, the season is unfavorable. Buying is particularly restricted in reinforced concrete bars.

Demand for coal is brisk, times of delivery are increasing, and many collieries complain of an insufficient number of empty trucks. The tonnage at the disposal of foundrymen has been increased, so that for November they will have 52,000 tons of phosphorus and 32,000 tons of hematite iron.

The position of French steelworks is favorable. Mills are well placed for orders, especially for rails, for which

France—2.78c

they have deliveries extending over four or five months. Steel merchant bars are weaker. Prices remain between 700 and 720 francs ($27.50 and $28.30) in the east for reinforced concrete round bars. Rods are sold at 680 francs ($26.85), this price being fixed by Societe de la Chiers.

Plates and sheets are rather weak, due to the long discussions concerning the constitution of a comptoir. Times of delivery for plates have become much shorter. Prices vary from 790 to 810 francs ($31.05 to $31.85). Medium-sized sheets are 890 and 960 francs ($35 and $37.55). For thin sheets prices range from 1150 to 1250 francs ($45.20 to $49.20). It is rumored that an agreement between wire drawers and nail producers will shortly be signed.

Hails Trade Conference as Aid to Business

(*Continued from Page* 1311)

cabinet, once made of wood, but which we now prefer of steel because it will not warp, its shelves get uneven, or offer shelter for insects or rodents. Look next at the refrigerator—steel—whose perfect impervious sanitary surface safeguards family health and makes automatic refrigeration possible. In this kitchen you see even steel chairs, steel shelving, steel stools, and in the rest of the house we long ago changed from wooden beds to steel for reasons which every woman knows. All throughout the house 'Mrs. Consumer' is preferring steel because it is easy to clean, because it does not warp, because it does not absorb grease, because it is more durable and fireproof."

Mrs. Frederick commented on steel houses abroad, notably in Holland and Germany, which in her opinion have been developed to a far greater degree than in this country. She mentioned large windows in new homes in The Hague, which are set in steel frames and have independent ventilating panels above the windows proper. She also spoke of "progressive obsolescence"—characteristically American, by which we tire of things that have not worn out, pass them on to other consumers, who likewise use them awhile and pass them on. Progressive obsolescence, she declared, is particularly applicable in buildings, as is indicated by the frequency with which skyscrapers only 20 years old are torn down to make way for new ones. It is this principle, she intimated, that will stimulate the building of new residences. Steel fabricators, she added, should not overlook the present opportunity of improving the efficiency of the American household.

Vincent Massey, Canadian minister to Washington, in an address on international co-operation, pointed to the influence of steel in relations between Canada and the United States. "The two nations," he said, "are sewn together physically by threads of steel." He referred to the 45 railroad lines which cross the border and the many bridges, notably the Peace bridge at Buffalo and the Ambassador span at Detroit-Windsor. He also cited the fact that 3,153,800 cars with United States license plates passed into Canada last year, which means, assuming an average of three passengers to a car, that nearly 10,000,000 persons, or a number equivalent to the population of Canada, visited the dominion. He also spoke of the increased use of structural steel in Canada, stating that the consumption of structural shapes for construction purposes in 1929 will represent an increase of one-half over last year.

Air Opinions on Welding and Riveting

NUMEROUS opinions on methods of construction, some of which were contradictory, were voiced Thursday morning in a symposium on welding, riveting, battledeck floor construction and fireproofing. The session was in charge of Lee H. Miller, chief engineer of the institute, who in a brief introductory statement emphasized the importance of these factors in the fabrication of steel.

Frank B. McKibben, General Electric Co., Blackgap, Pa., presented an unusually clear statement on welding. He reviewed the progress of fabrication, mentioning pin connections, riveted and welded joints as the three means of fastening structural members. He defined the three major classes of welds—gas, chemical and electric, and subdivided the latter into resistance, arc, and atomic hydrogen welding. He also reviewed the gradual acceptance of welding in municipal building codes, stating that 58 cities now permit its use.

Dr. McKibben then exhibited views of welds that had been tested and also buildings in which welding has been employed. He showed a number of illustrations of automatic welding machines and declared that in his opinion the greatest progress in welding during the past year has been in automatic practice. As a closing injunction, the speaker advised fabricators to study the possibilities of welding, to employ it where it proves useful, and to ignore it where other methods are more suitable.

J. C. Lincoln, president, Lincoln Electric Co., Cleveland, opened his talk with the declaration that as soon as the public recognizes the possibility of using welding on buildings, it will demand the use of that process because of the absence of noise. Mr. Lincoln revised Dr. McKibben's classification of electric welding in order to bring out the features of the carbon arc, as distinguished from those of the metallic arc. He exhibited numerous illustrations of automatic welding machines, including those for the fabrication of pipe. He stated that some of these are adapted to welding the battledeck type of steel plate floor.

Ductile Welds New Aim

In the course of this discussion, Mr. Lincoln emphasized the present trend toward ductile welds. "In the early days of welding," he said, "efforts were directed toward obtaining high tensile strength in the weld. Today the trend is toward greater ductility, while at the same time retaining the tensile strength." He showed illustrations of weld metal that had been twisted and otherwise distorted to indicate its ductility.

R. W. Boggs, Linde Air Products Co., New York, spoke briefly on gas welding of structural steel, touching on the structure recently erected at Niagara Falls with oxyacetylene welded joints.

A. F. Jensen, president, Hanna Engineering Works, Chicago, presented a strong argument in behalf of riveted construction. For the most part, he dealt with the progress made in the improvements made in the technic of development of riveting equipment and riveting. His remarks on these phases of the subject will appear in next week's issue of IRON TRADE REVIEW.

Mr. Jensen showed slides of modern equipment indicating how riveting is being adapted to work where automatic or semi-automatic operation is desirable. He also commented on several buildings and pipe lines which previously had been mentioned by Messrs. McKibben and Lincoln. The 5-story building at Sharon, declared Mr. Jensen, cost $5800 more than a riveted structure of similar design would have cost. The 12-story Homestead hotel addition at Hot Springs was contracted for at $8 per ton in excess of what would have been bid for a riveted structure, he maintained.

Mr. Jensen suggested a policy of co-operation between advocates of welding and riveting, when he said:

"There is a field of usefulness for both welding and riveting and we believe the advancement of both processess lies not in competition but in their supplementing each other."

He then cited numerous projects in which both welding and riveting had been employed to advantage.

A. J. Meier, Rockwood Corp. of America, St. Louis, and Henry J. Schweim, U. S. Gypsum Co., Chicago discussed the fireproofing of structural steel buildings. The latter speaker outlined the results of various fire tests showing the insulating properties of gypsum block against heat for

Engineering Staff of American Institute of Steel Construction

Back row, left to right, Lee H. Miller, chief engineer; district engineers W. E. Emmett, San Francisco, and Henry Penn, Chicago. Second row, district engineers J. N. Keenan, New York; Ernest N. Adams, Worcester, Mass.; James G. Allen, Birmingham, Ala., and Alexander Miller, Cleveland; F. H. Frankland, director of engineering service. Front row, district engineers L. H. Dodd, Dallas, Tex.; B. F. Hastings, Philadelphia; C. Curtis Tracy, Milwaukee; and at right end Jack Singleton, Topeka, Kans.

periods up to four hours and temperatures up to 2200 degrees Fahr. Much of the discussion of fireproofing centered around the protection of the new battledeck steel plate floor. A demonstration of this type of floor, including design, method of welding the plates, fabrication of structural frame by riveting ,and fireproofing of columns and floor, was staged in a parking lot adjacent to the hotel.

One of the outstanding addresses of the convention was "The Credit Statement" by Alexander Wall, secretary, Robert Morris Associates, Lansdowne, Pa., who explained a method by which financial information obtained from various companies in an industry is compiled to provide averages with which each company may compare its own figures. He presented a report based on returns from 54 structural steel fabricators to illustrate how the plan furnishes a financial yardstick by which individual concerns can measure their financial position with that of the industry as a whole. In order that Mr. Wall's address may be presented in detail, his remarks will be published in next week's issue of IRON TRADE REVIEW.

"Sense for Dollars" was the subject of an address by L. Seth Schnitman, chief of division, "Survey of Current Business," department of commerce, Washington. Mr. Schnitman emphasized the importance of reliable statistics in business and exhibited charts showing pertinent facts regarding the structural steel industry. He said:

"Fifty-one per cent of the number of structural plants have capacities of 500 tons or more. At the present time these firms have 92 per cent of the entire capacity of the industry. Forty-nine per cent of the number of firms in the industry are of less than 500 tons capacity and, in the aggregrate, represent but 8 per cent of the total capacity of the industry. That over a 20-year period this group has shown only slight fluctuation in relative importance is, I think, significant evidence that there is an economic justification for small units within the industry."

H. A. Fitch, Kansas City Structural Steel Co., Kansas City, Kans., presented the report of the mill relations committee, in which he mentioned the continued interest of the mills in the work of the institute and stressed the importance of research. Buildings and other structures of the future will differ from those of today, he declared, and it will be necessary for the mills and fabricators to hold their leadership if they are to direct these developments. It is hoped the importance of this research work will prove an incentive for greater cooperation from rolling mills.

On recommendation of the nominating committee all officers and directors of the institute were re-elected unanimously for another year.

Bright Future Confronts Marine Industry

New York, Nov. 19.—Gratification over the sharp increase in the amount of ship construction in American yards was expressed by Homer L. Ferguson, president of the Society of Naval Architects and Marine Engineers before the annual convention of that body, Nov. 14.

"For the first time since our shipyards were filled to overflowing with the great government shipbuilding program during the war," said Mr. Ferguson, "we are able to take an optimistic view of shipbuilding."

He referred to the influence of the Jones-White act on shipbuilding, saying that the quarter-billion-dollar construction loan fund established by this act has been available for little more than a year, and yet the shipping board has granted loans for about one-fifth of the fund to rehabilitate our merchant marine by making possible the construction of modern passenger and cargo vessels in American shipyards for overseas trade.

"When obscurities in the language of the act relative to the mail contracts are straightened out," said Mr. Ferguson, "we may expect greater activity in the application for loans."

Gratification was expressed in connection with the unusual number of contracts for vessels awarded during the past year, the most important award including five cruisers for the United States navy. Fifteen passenger and freight vessels have been contracted for along with several freighters, revenue cutters, ferry boats, carferries and car floats, besides several hundred barges of various sizes. Americans are turning more and more to the water for pleasure, as is indicated by the contracts for 21 large steel yachts awarded in the past year. Mr. Ferguson said:

"At present more than 20 passenger and freight vessels are contemplated, besides numerous other smaller craft," but little oil tanker tonnage has been built since the war, due to the large number of tankers constructed at that time by the shipping board which have had to be absorbed by the trade. Greater activity has been shown this year, 20 contracts for tankers, totaling about 200,000 deadweight tons, already having been placed with the various yards and about 75,000 tons more probably to be placed in the near future.

"The construction program of the United States lines is by far the most important ever contemplated in this country. They have already asked for bids for two 22-knot, first cabin ships, 705 feet long, and proposed two more of the same type in addition to two superliners to operate in conjunction with the LEVIATHAN."

Business Will Rebound Shortly from Stock Market Crash

By John W. Hill

Financial Editor, Iron Trade Review

FROM the year's peak early in September to the lowest level of last week, prices of leading American industrial common stocks had declined by approximately 50 per cent. This collapse of security values over a period of about two months has no parallel in the history of American finance. Not only has the drop been more precipitate than ever before, but the extensive losses were accomplished in a fraction of the time covered by previous comparable declines. In the great stock market recession of 1919-21 industrial stocks, as measured by Dow-Jones average, went down 46½ per cent in 21 months. In 1907-08 this average dropped 45 per cent in 10 months' time.

The swift catastrophe which has overtaken the recent great bull market has unsettled both business and financial sentiment. The result has been uncertainty and the development of considerable hesitation in trade and industry. The question uppermost in the minds of business men is—What does the stock market callapse portend for industry over the coming months?

If the answer to this question be sought from the records of other similar great speculative crashes, it invariably will be found that unfavorable business conditions have followed. This was true after the 1907 financial panic and it was equally true in 1920. In the 13 great bear stock markets of the last 50 years 12 of them have been followed by serious business depressions.

In the light of what has happened in the past, and in view of many current evidences, it would be blind to suppose that business is to escape a slowing down. In fact, in a number of important industries this already has taken place, and in some instances rather sharply.

It is worth while to examine, however, some of the basic factors in the economic situation in an effort to determine the probable degree and extent of whatever decline in business is at hand. Following the bursting of the postwar inflation bubble in business and speculation, trade and industry dropped to its lowest point late in 1921 and there was no important recovery to active levels until late in 1922.

The present stock market recession has been more severe in a much shorter time than that of 1920-21, but conditions in industry and business point to the strong probability that there will be no decline in trade comparable to that at the beginning of the present decade. There are a number of important influences bearing upon the business outlook which indicate that no prolonged depression is at hand. Among these are the following:

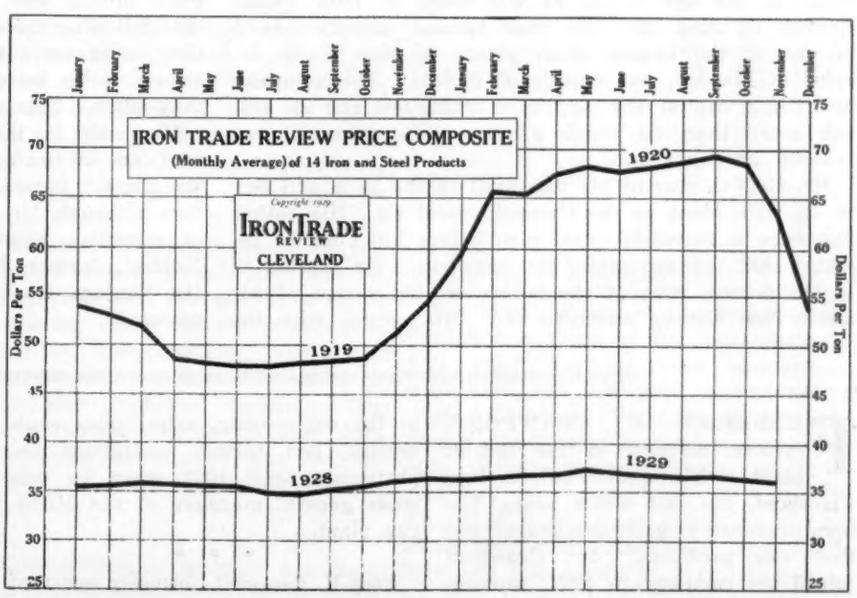
1. Commodity prices have not been inflated with a resulting heavy accumulation of swollen inventories calling for liquidation.
2. The country's credit situation is extraordinarily sound and the drastic reduction of brokers' loans has corrected the one weak symptom in the credit structure.
3. Railroad prosperity and large railroad purchasing programs lend a factor of great support to industry.
4. The cash position of important industries is in the soundest condition in recent years.
5. Railroad efficiency and absence of car shortages have enabled business to continue on a hand-to-mouth buying basis.
6. Government measures are being designed to steady industry, including income tax reduction of $160,000,000, credit easing by the federal reserve board, an economic conference called by President Hoover, and possible starting of $350,000,000 of government projects.

Probably the most significant of these factors is that of prices. In 1920 wholesale commodity price levels, as measured by the United States bureau of labor statistics, climbed to a peak of 167.2, compared with an index of 70 in 1913. Following this, the index declined to a low point of 93 in 1921. From the 1921 low point the index at the highest point of 1929 stood at 97.

This relative stability of commodity prices is one of great underlying strength in the current situation, so far as industry is concerned. It bespeaks the lack of bloated in-

(*Concluded on Page* 1356)

Iron and Steel Prices Require No Deflation


IRON TRADE REVIEW PRICE COMPOSITE
(Monthly Average) of 14 Iron and Steel Products
Copyright 1929
IRON TRADE REVIEW
CLEVELAND
1920
1919
1928
1929
Dollars Per Ton
January February March April May June July August September October November December
75 70 65 60 55 50 45 40 35 30 25

Industrial Men in the Day's News

K. L. Griffith, New President, Seneca Iron & Steel Co., Buffalo

FROM mill boy in an Ohio plant of the United States Steel Corp. to the president's chair of a $4,000,000 sheet manufacturer marks the rise of this 35-year-old executive.

DIRECTORS formally elected him to succeed the late Hugh Kennedy, whom he had relieved of much detail work during a period of illness.

HE IS known as "K.L." to his fellow officers and his fellow workmen as well, now numbering 1200 or more.

ALMOST outdoing Horatio Alger at his best, the story of the rise of Keenan L. Griffith to the presidency of the Seneca Iron & Steel Co., Buffalo, adds one more to the list of remarkable success romances in the iron and steel industry. "K. L.", as he is familiarly known to his friends and to many of his 1200 fellow workmen, as he prefers to know them rather than employes, was elected to that office at the age of 35, as was noted in IRON TRADE REVIEW of Aug. 29. He thus became executive head of one of the largest sheet plants in New York, located at Blasdell, just outside of Buffalo. This company now has a capital and surplus of $4,000,000 and an output more than 10 times greater than when it was founded 22 years ago.

Mr. Griffith started his industrial career as a mill boy in an Ohio plant of the Carnegie Steel Co. His father had been a successful steel man before him, but he insisted that the son make his own way. He started in at the bottom rung of the ladder and by reason of his ability has already advanced far. His service with the United States Steel Corp. terminated during the war. After the signing of the armistice he located in Buffalo and was employed as purchasing agent by the Seneca Iron & Steel Co. He soon was promoted to be assistant general manager, and then general manager, and in 1925 was elected vice president. Due to the ill health of Hugh Kennedy, then president, Mr. Griffith was called upon to discharge the duties of acting president. This pinch hitting was accomplished in such an able manner that following the death of Mr. Kennedy, directors decided they could serve themselves, the company and its customers in no better way than to elect him formally to that office. This was done Aug. 15, 1929.

His wife is the daughter of James Paterson, vice president of the company, one of two men who financed the plant. Paterson interests still control the corporation, although Mr. Paterson is not active and the duties of executive vice president are in charge of Clifford Hubbell, former Buffalo banker. Mr. Griffith believes the Niagara frontier is the coming steel center of the nation.

FREDERICK C. CRAWFORD, general manager of the Detroit plant of Thompson Products Inc., Cleveland, the last seven years, has been promoted to general manager and first vice president. Mr. Crawford joined the company in 1917, working in the engineering, sales, sales engineering and factory production departments until 1922 when he was made general manager of the Michigan plant.

* * *

Fred H. Ramsdell, formerly assistant traffic manager of the Stanley Works, New Britain, Conn., has been appointed traffic manager of the New Departure Mfg. Co., Bristol, Conn.

* * *

Thomas Fuller, formerly manager of the Charlotte, N. C., office of the

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been appointed manager of the Atlanta, Ga., office, to fill the vacancy caused by the death of H. A. Coles.

* * *

C. S. Crawford was recently appointed general manager of the Cleveland plant of the Briggs Mfg. Co., Detroit, automobile body builder, to succeed Paul Coler, resigned.

* * *

H. V. Schweitzer and J. G. Newman have been added to the sales force at Cleveland, 722 Perry-Payne building, of the Paasche Airbrush Co., Chicago.

* * *

S. H. Slaymaker, of Fairbanks, Morse & Co., Beloit, Wis., has been placed in charge of the metals and foundry section of the annual Rock River Valley Safety conference to be held at Madison, Wis., May 6, 1930.

* * *

S. S. Buckley, formerly president of Onondaga Steel Co., Syracuse, N. Y., has become affiliated with Ekstrand & Tholand, 1 East Forty-second street, New York, sellers of Swedish sponge iron, Swedish wire and other iron and steel products.

* * *

B. E. Crawford, general manager of the Toledo Steel Products Co., Toledo, O., will leave Dec. 1 to assume similar duties with the Thompson Products Co., St. Catherine, Ont. He has been with the Toledo company 11 years.

* * *

Dwight C. Wheeler has been elected president of the Acme Shear Co., Bridgeport, Conn., to succeed his father, the late David B. Wheeler, founder of the company. The new president has been secretary and general manager of the company.

* * *

Stuart Cooper and Fred B. Hofft were elected vice presidents of the United Gas Improvement Co., Philadelphia, at a meeting of the company's executive committee. Both have had many years' experience in public utility operation and management.

* * *

Frank P. Walsh has been appointed manager of the newly-opened office at 1442 Syndicate Trust building, St. Louis, of the Whiting Corp., Harvey, Ill., builder of cranes and foundry equipment. Mr. Walsh has been at the main office in both estimating and sales departments for about 14 years.

* * *

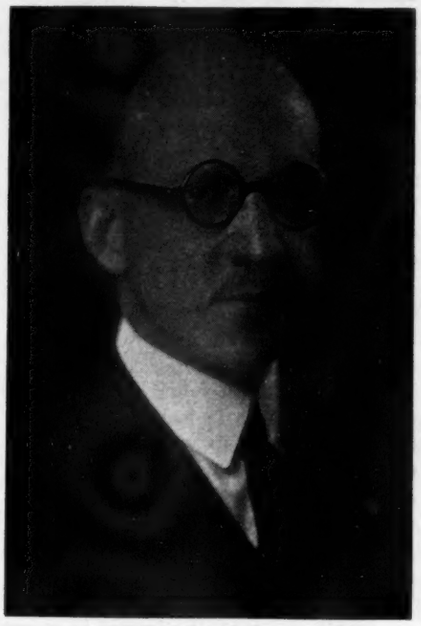
L. N. Brown, formerly chief metallurgist of the Chrysler Motor Corp., Detroit, has been appointed general manager of the Cleveland plant of the Chicago Pneumatic Tool Co., Chicago. He succeeds P. J. Hamilton, who resigned to become sales manager of the Productive Equipment Co., Chicago.

* * *

Ralph C. Clore, branch sales manager of the United States Electrical Tool Co., Cincinnati, for several years, has been promoted to be general sales manager. He succeeds George M. Lawrence, who resigned recently to become vice president of the General Radial Drill Co., Cincinnati. Mr. Clore also has had production experience.

* * *

J. M. McComb, Crucible Steel Co. of America, New York, has been elected president of the Motor and Equipment association, which completed its annual convention and trade show in Chicago last week.



W. F. MORRIS JR.

Who as noted in IRON TRADE REVIEW of Oct. 31 was elected vice president of the Weirton Steel Co., Weirton, W. Va.

C. C. Secrist, of the Victor Mfg. & Gasket Co., Chicago, was elected assistant treasurer.

* * *

Benjamin Friedman, associated for 25 years with the waste materials industry, and for the past five years purchasing agent for the Metals Refining Co., Hammond, Ind., has established his own business with offices in the Lake Michigan building, 180 North Michigan avenue, Chicago. Mr. Friedman's organization will deal in copper scrap and nonferrous specialties.

* * *

William Hutton Blauvelt has been appointed manager of gas engineering of the Columbia Engineering & Management Corp., a subsidiary of Columbia Gas & Electric Corp., New York. For more than seven years, Mr. Blauvelt has been engaged in consulting engineering work, specializing in problems pertaining to coal, gas and oil.

Charles R. Bellamy, associated with Mr. Blauvelt in consulting practice, has joined the Columbia corporation as gas engineer.

* * *

Conrad W. Given has been made western Pennsylvania-Detroit service manager for Ferro Enamel Supply Co., Cleveland. His quarters are in Erie, Pa. Mr. Given is a graduate from Iowa State university and was for a number of years associated with Chattanooga Stamping & Enameling Co., Chattanooga, Tenn.

Lester Hudson has left the enamel service department of Ferro Enamel Supply Co. to take charge of porcelain enameling operations at the Em-

(*Concluded on Page* 1357)

Locomotive Sales Gain

Washington, Nov. 19.—October shipments of steam locomotives increased sharply over September and were 60 per cent larger than October, 1928, according to the department of commerce. A comparison of the ten months against the same period of last year also shows a large gain. Monthly comparisons follow:

Year and Month	Shipments Total	Shipments Domestic Steam	Shipments Domestic Electric	Unfilled orders Total	Unfilled orders Domestic Steam	Unfilled orders Domestic Electric
1928						
Oct.	36	26	.....	170	113	29
Total (10 mo.)	471	311	87	.....	.....	.....
Nov.	35	20	1	152	104	31
Dec.	44	36	4	282	238	27
(1928)	550	367	92	.....	.....	.....
1929						
Jan.	23	6	6	278	251	21
Feb.	23	20	1	339	301	20
March	35	31	4	488	419	24
April	61	57	2	495	419	24
May	99	92	2	444	362	22
June	78	58	1	552	489	21
July	69	39	3	539	490	18
Aug.	129	117	6	436	392	13
Sept.	75	60	7	429	347	55
Oct.	96	90	6	423	347	49
Total (10 mo.)	688	570	38	.....	.....	.....

Junk Virginia Stack

The blast furnace of the Intermont Coal & Iron Corp. at Big Stone Gap, Va., which has not been operated since 1920, has been sold to Platnick Bros., Bluefield, Va., for junking. Fred L. Troy, who was general manager of the company in charge of its coal and ore mines, died at Salem, Va., June 6, and was buried at Big Stone Gap. The stack was built in 1890 and last rebuilt in 1917. It had an annual capacity of 35,000 tons.

Business Will Rebound After Stock Crash

(*Concluded from Page* 1353)

ventories and indicates that industrial companies have cash on hand instead of having their assets frozen in unmovable stocks of raw or finished materials. Much of this cash until recently was loaned out on the call loan market in Wall street. Largely withdrawn from that quarter, it is now available for business uses and expansion where needed.

The iron and steel industry is representative of the relative stability that has prevailed for commodity prices. As shown on the accompanying chart, IRON TRADE REVIEW'S composite average rose to a peak of $69 in 1920. It dropped to a low of $32.86 in 1922 and from this point there has been only a small increase. At the highest point of 1929 the index stood at approximately $37, an increase of less than 12 per cent from the bottom of the drop in 1921. In 1920 prices of iron and steel were bid up partly by fears of shortages due to rail congestion, and the result was a large accumulation of orders, many of which were later canceled.

Railroad Outlook Favorable

Another factor of great importance is the railroad situation. In 1920 the railroads were at a low level of efficiency and their purchases of equipment were not great. In the current year, railroads have developed a high standard of efficiency and their earnings in 1929 have been unprecedented. Purchases in recent months have been the largest in five years and there is no indication that the railroads intend to abandon their present program of improvement. Low money rates and a more favorable bond market will tend to stimulate railroad buying through easier financing.

On the other side of the picture is the undeniable condition of overproduction in the automobile industry, a fact more responsible for current reaction in trade than the stock market break. During the first 10 months of 1929 automobile manufacturers turned out more than 5,200,000 cars and trucks, compared with 4,600,000 in all of 1928. All of the gain was due to the comeback of Ford whose registrations in the past months gained 430 per cent while all others decreased about 1 per cent. Dealers' stocks are burdensome in many sections, and the used car problem is acute. Since the automobile industry has become the largest consumer of iron and steel, the sharp curtailment of operations in an effort to correct the overproduction has had a repercussion upon the iron and steel industry as well as other suppliers. The decline in automobile production already was under way when the stock market crash appeared, but this event accentuated sales resistance.

Because of the great increase in the number of people holding speculative securities, the tremendous losses have had an undoubted adverse effect upon the purchasing power, both actual and hoped-for, of undetermined thousands of people. This is having a direct unfavorable effect upon certain lines of business.

In general, it may be said that the severe decline of the stock market values has caused a pervading sense of uncertainty and hesitation in business. This is based upon some doubt as to the trend of industry over the coming months. Judging from past experience and current indications it would seem that a recession in business is probable; in fact, in some lines—such as automobiles, iron and steel, and others—curtailment of operations already is under way.

At the same time, practically all of the basic factors controlling finance and business point to the fact that no prolonged depression is at hand. Banking credit is sound and the decline in brokers' loans by nearly $3,000,000,000 in six weeks has helped to ease money rates markedly. The cash ratio of the federal reserve system stands at over 74 per cent, compared with about 40 per cent in 1920, and the rediscount rate of the New York federal reserve bank has been cut to 4½ per cent, the lowest in many months.

General Soundness Noted

Industry in general is in a sound cash position, with no accumulation of inventories and overproduction has not been general. In the case of automobiles where there has been overproduction the remedy of reduced output is being applied to the situation. Commodity prices have not been inflated and no sweeping deflation, such as took place in 1920, and which rocked industry at the foundation, is imminent. Moreover, easier money will tend to encourage capital expenditure and building projects, as well as permitting European borrowers to obtain funds here on more favorable terms, thus making it possible for them to buy American goods in increasing amounts.

The effect of easier money on building already is discernible in latest records, which reveal that construction plans in contemplation at the end of October were 73 per cent over those of one month before and 30 per cent greater than one year ago.

The stock market collapse swept downward to what appears to be bottom with unprecedented swiftness. The pendulum gave a false picture of business in September when it was at its highest point, and it has given an equally false forecast of business at the recent extreme lows. However, the prompt correction of excessive security price inflation and of the credit situation, represented by swollen brokers' loans, may well have its counterpart in a reasonable prompt readjustment of whatever unhealthy symptoms have been allowed to develop in business.

With many of the pronounced ills making for prolonged depression in business absent from the present situation, while important forces making for stimulation are at work, it seems probable that industry may touch its lowest point in the current recession as early as December and that gradual recovery may be witnessed over the early months of 1930.

Pails and Tubs Higher

Washington, Nov. 19.—September production of pails and tubs increased slightly over August but was lower than September, 1928. A decline also is noted in a comparison of the nine months, as against the same period for last year, according to the department of commerce comparisons, which follow:

(In dozens)

	PAILS, TUBS		OTHER WARE	
1928	Production	Shipments	Production	Shipments
Sept.	150,845	139,183	55,850	50,606
Total (9 mo.)	1,397,097	1,405,051	389,364	369,246
Oct.	153,813	152,258	56,469	54,596
Nov.	131,792	103,290	33,553	34,012
Dec.	112,923	102,802	36,042	23,567
Total	1,795,625	1,763,401	515,428	481,421
1929				
Jan.	151,106	165,745	40,649	36,896
Feb.	151,019	170,813	60,471	43,329
March	211,252	211,516	50,055	49,549
April	165,155	171,722	55,778	55,632
May	176,622	150,501	43,370	38,597
June	98,857	104,762	37,479	35,334
July	105,454	109,841	42,384	44,117
Aug.	107,004	108,461	53,250	54,860
Sept.	113,698	120,297	46,594	52,970
Total (9 mo.)	1,230,167	1,313,658	432,030	411,284

Alan Wood Co. Leases New Jersey Ore Mines

Philadelphia, Nov. 19.—Alan Wood Steel Co. has leased from Warren Foundry & Pipe Corp. for a period of 15 years the Replogle and Oxford iron ore properties of that company in New Jersey. The purpose of the lease is the establishment of a source of iron ore supply for the steel com-

pany's blast furnaces at Swedeland, Pa.

It is the intention to put these mines on a production basis as soon as the necessary repairs and modifications in the milling arrangements can be completed. The actual operation of these properties will be carried on by Alan Wood Mining Co., recently organized for this purpose.

Men of Industry

(*Concluded from Page* 1355)

erson-Brantingham Corp., Rockford, Ill.

* * *

Robert M. Kanik, president and general manager of Moloch Foundry & Machine Co., Kaukauna, Wis., was recently made a director of the Appleton Steel Tube Co., Appleton, Wis.

* * *

H. S. Warwick, formerly secretary, Youngstown Real Estate board, now is in charge of the newly created department of industrial promotion of the Youngstown Sheet & Tube Co., Youngstown, O.

* * *

L. E. Keiling, purchasing agent, has been appointed general sales agent for the New York Air Brake Co., 420 Lexington avenue, New York. Many of his former duties in the purchasing department will be taken over by R. R. Petersen, assistant purchasing agent.

* * *

William H. Textern, recently made assistant to R. J. Kaylor, director of publicity, Youngstown Sheet & Tube Co., Youngstown, O., was formerly in charge of market survey work for the National Association of Flat Rolled Steel Manufacturers, Cleveland, for 18 months. He has been identified with the steel business in various capacities since 1913.

* * *

George L. Danforth Jr., assistant general superintendent, has been made general superintendent of the South works, Illinois Steel Co., South Chicago, Ill., to succeed the late Peter A. Newton, whose death was noted in IRON TRADE REVIEW of Nov. 7. Mr. Danforth has been connected with the South works of the Illinois company since 1900. He was made assistant general superintendent in 1918.

Adding More Coke Ovens

Colorado Fuel & Iron Co., Pueblo, Colo., is planning to construct 42 additional by-product coke ovens and auxiliary equipment.

Obituaries

LESTER S. CARROLL, 53, vice president in charge of purchases, of the American Locomotive Co., New York, since 1924, died unexpectedly, Nov. 14, on a subway train in that city. Prior to his election as vice president Mr. Carroll had charge of the company's general purchases since March, 1920. As a boy he was employed by the Chicago & North Western railroad, progressing to general purchasing agent of the entire system. When government wartime control of railroads was inaugurated, Mr. Carroll became chairman of the regional purchasing committee in charge of the northwestern region, with headquarters at Chicago, and when the railroads were restored to private ownership, he became affiliated with the American Locomotive Co.

* * *

Harry I. Illingsworth, 63, president of the Boston Machine Works, Lynn, Mass., died Oct. 31 at his home in that city.

* * *

Robert E. Jennings, 83, former president, Carpenter Steel Co., Reading, Pa., died Oct. 30, at his home in Mont Clair, a suburb.

* * *

Clarence R. Crain, 38, superintendent of the Mattison Machine Works, Rockford, Ill., died Oct. 29. He was chairman of the Rockford branch of the American Society for Steel Treating.

* * *

Charles A. Hood, 60, manager of the Buffalo Tool & Supply Co., Buffalo, died at his home in Buffalo. He had been associated with the company for 30 years.

* * *

David Van Schaack, 61, founder and twice president of the National Safety council, died Nov. 12 at Hartford, Conn. He was affiliated with the Aetna Life Insurance Co.

* * *

John Koenig, 71, pioneer aluminum manufacturer and founder of the Aluminum Goods Mfg. Co., Manitowoc, Wis., died Nov. 15 in that city. He served as vice president of that company until about a week ago. He also was principal owner of the Metalware Corp., Two Rivers, Wis. Mr. Koenig came to this country from Germany in his early twenties.

* * *

Frank Salomon, who died recently in Munich, Germany, was identified with Brown & Sharpe Mfg. Co., Providence, R. I., for 12 years before he went to Europe as sales engineer for the Schuchardt & Schutte Co. He later was identified with Alfred H. Schutte in Cologne. He subsequently became president of the Otto Gas Engine Co., Philadelphia, and returned to Germany in 1914.

* * *

Charles B. Moore, for many years connected with railroad supply manufacturing companies, died Nov. 9 at Chicago. He was chairman of the board of directors of the Oxweld Railroad Service Co., president of the Ajax Brake Co., Chicago, and a trustee of Lake Forest college, Lake Forest, Ill.

Mr. Moore also was vice president of the Youngstown Steel Door Co., Cleveland. He belonged to Glen View and Evanston Country clubs, Evanston, Ill., and the Union League, Collegiate, University, Press and Transportation clubs, Chicago.

* * *

John J. McDougall, 42, superintendent of mines, British Empire Steel Corp., died at Sydney, N. S., Nov. 14. He was born at Glace Bay, N. S., and was educated at St. Francis Xavier college, Antigonish, N. S. Mr. McDougall began his career as mine surveyor with the Dominion Coal Co. and later served as a manager of the Dominion Steel Company's iron ore mines at Wabana, Belle island. After occupying other important positions he finally was appointed general superintendent of coal mines for the British Empire Steel Corp. Mr. McDougall was a member of the Mining and Metallurgical Institute of Canada, Engineering Institute of Canada, British Institute of Mining Engineers, and other technical organizations.

Canadian Tariff Schedule Is Published

Ottawa, Ont., Nov. 19.—The advisory board on tariff and taxation has published its newly suggested schedule of iron and steel products. The revised schedule does not include rates but is in the nature of a framework. The tariff board Nov. 26 begins its tariff hearings. In the new schedule iron and steel products are separated from antimony, bismuth, cobalt and similar metals. Drawback proposals will be considered on 29 items.

Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

SULLIVAN MACHINERY CO., Chicago, manufacturer of quarrying and mining machinery, air compressors and similar machinery, has completed an addition to its plant at Michigan City, Ind. Machine tool equipment at the Claremont, N. H., and Michigan City plants has been increased during the present year and orders have been placed for additional equipment to increase production.

* * *

CHICAGO PUMP CO., Chicago, has appointed F. W. Forward, 520 West boulevard, Elkhart, Ind., its representative in that territory.

* * *

SPRINGFIELD BRONZE CO., Springfield, Mass., has changed its name to Springfield Bronze & Aluminum Co.

* * *

CLARKE SANDING MACHINE CO., Chicago, has decided to move its plant to Muskegon, Mich., where it is building a plant containing 37,000 square feet of floor.

* * *

MULTIPLEX FAUCET CO., 4325 Duncan avenue, St. Louis, has completed an 80 x 160 foot addition to its machine shop. The company manufactures metal faucets and beverage dispensing equipment.

* * *

MURRY JACOBS CO., 554 South Pedro street, Los Angeles, has been appointed representative in southern California territory for the Reading Chain & Block Corp., Reading, Pa.

* * *

PAASCHE AIRBRUSH CO., Chicago, has moved its New York offices to larger quarters at 103 Lafayette street, on the ground floor. Complete stock will be maintained at the new location.

* * *

ALLIS-CHALMERS MFG. CO., Milwaukee, reports unfilled orders Nov. 1 amounting to $13,900,000, an increase of $454,000 over Oct. 1. It is pointed out that there has been little variation in the unfilled orders of the company in any recent months, and while the volume now on hand is somewhat lower than at the beginning of August and September, when the totals aggregated $14,918,000 and $14,036,000, respectively, business on the books is well in advance of the total a year ago. The report of Nov. 1 is about 45 per cent greater than unfilled orders at the first of the year, amounting to $9,639,000, and almost as much in excess of the $9,704,000 total at Nov. 1, last year.

* * *

VITREOUS STEEL PRODUCTS CO., Nappanee, Ind., manufacturer of porcelain tops for tables and kitchen cabinets, will install immediately its third continuous enameling furnace. Installation will be under the supervision of the Ferro Enamel Supply Co., Cleveland.

* * *

WILLIAM B. SCAIFE & SONS CO., Pittsburgh, manufacturer of range boilers and steel tanks, has completed construction of a warehouse for storage of galvanized products to allow larger stocks to be carried and better service afforded customers.

* * *

LEMPCO PRODUCTS INC. is the new name of the former Lake Erie Metal Products Co., Bedford, O., manufacturer of axles, worms, gears and brake drums. No other change is made, directorate, personnel and financial structure remaining the same. The change was made to identify the company with the trade name under which its products have been sold.

* * *

STANLEY ELECTRIC TOOL CO., subsidiary of the Stanley Works, New Britain, Conn., has bought the trade name, stock on hand, tools, jigs and fixtures of the Unishear Co., 270 Lafayette street, New York, and will continue manufacture and development at its main plant at New Britain. The line includes motor-powered shears for outside and inside cutting of sheet material. Distribution will continue through jobbing channels. Service will be furnished by the Stanley Electric Tool Co.

* * *

TIME-O-STAT CONTROLS CO., Elkhart, Ind., has completed two wings at its plant, giving 79,000 square feet additional floor space. Other additions are being planned to meet demands for enlarged production. Since August, when the new plant at Elkhart was occupied, the payroll has been increased from 350 to 875 persons.

* * *

G F. WRIGHT STEEL & WIRE CO., 13 West Ohio street, Chicago, manufacturer of wire goods and wire cloth, has leased four floors at 22 West Austin avenue for manufacturing.

* * *

CHAIN BELT CO., Milwaukee, has appointed five distributors of its chain and transmission equipment in the Southeast: Bailey-Lebby Co., Charleston, S. C.; Georgia Supply Co., Savannah, Ga. and Jacksonville, Fla.; Harry P. Leu Co., Orlando, Fla.; J. M. Tull Rubber & Supply Co., Atlanta, Ga. Each of these will stock the entire line of chains and auxiliary equipment.

* * *

STANTON IRONWORKS CO. LTD., near Nottingham, Eng., is to build a new plant for the manufacture of de Lavaud spun iron pipe. The present plant, with an output of about 25 miles of pipe per week, is inadequate and output will be increased 15 miles per week. The pipe will be made in 18-foot lengths from 4 inches diameter upward, instead of the former 12-foot lengths.

* * *

CARY MFG. CO., Waupaca, Wis., manufacturing oil-burning heating furnaces and similar equipment, has completed transfer of its plant and headquarters from Minneapolis to Waupaca. It has acquired the plant of the former Jorgenson Mfg. Co., manufacturer of brass castings, with seven acres additional and has established a complete machine shop and foundry. A new hydroelectric generating plant has been developed on the Crystal river to meet power needs.

* * *

INLAND STEEL CO., Milwaukee, established a new all-time record in production during October, when the output of its six sheet mills reached 7398 tons of black and galvanized sheets. This compared with 7142 tons in August, 1929, the previous high record. October shipments from the Milwaukee mills were 7643

tons. The Milwaukee mills have operated 780 consecutive days without accident.

* * *

STANLEY ELECTRIC TOOL CO., subsidiary of the Stanley Works, New Britain, Conn., has purchased the trade name, stock on hand, tools, jigs, fixtures and business of the Ajax Hammer Corp., 117 West Sixty-third street, New York, and will continue manufacture and development at their main plant in New Britain, Conn. The line consists of electric hammers used extensively for construction and maintenance work. Distribution will continue through regular established jobbing channels.

Witherow Is Merged with Donner Steel

Buffalo, Nov. 19.—Donner Steel Co., Buffalo, control of which was acquired recently by the Otis-Eaton-Mather interest of Cleveland, and the Witherow Steel Co., Pittsburgh, are being merged by an exchange of stock.

The Witherow company, reorganized in 1927 as the successor to the original company formed in 1914, manufactures steel products, including automobile parts. It owns Dilworth, Porter & Co., Pittsburgh, manufacturer of railroad track material.

Combined assets of the Donner and Witherow companies are said to approximate $40,000,000. It has generally been regarded that the Donner company would ultimately be lodged with other middle western independent steel producers whose merger is contemplated.

W. H. Donner, president of the Donner company, and Robert Donner, his son and sales manager of the company, have resigned. W. P. Witherow, president and general manager of the Witherow company, becomes chairman of the Donner company, but remains as head of his own unit.

Tom M. Girdler and R. J. Wysor, until recently associated with the Jones & Laughlin Steel Corp., but now with the Otis-Eaton-Mather interest, now are directors of the Donner company. F. K. Smith, vice president and treasurer of the Donner company, becomes its ranking executive officer.

F. o. b. Pittsburgh

(*Concluded from Page* 1348)

tributing materially to the annual alloy steel output. Leading interests in this field are the American Stainless Steel Co., Krupp Nirosta Co. Inc., and the Rustless Iron Corp. of America. The first two have licensed various American steel companies to produce and sell their products. Rustless Iron Corp. operates a plant at Baltimore, making only semifinished material, however. The company recently announced its intention of erecting a large plant near Pittsburgh, Cleveland or Cincinnati. At present the American Sheet & Tin Plate Co. and the Superior Steel Corp. in this district are rolling sheets and strip from the semifinished product. These alloys derive their corrosion-resisting properties from their chromium content. Chromium plating of plain steel sheets and strip has been adopted widely by the automotive industry during the past few years, but it is now predicted that use of the alloys shortly will supersede this practice just as nickel plating gave way to chromium plating. This already has occurred on certain exposed parts of some automobiles. The field for application of this material in many types of equipment for other than decorative purposes also is large.

Increased use of alloy steels is reflected in the substantial upturn in operations of the Molybdenum Corp. of America this year. The company operates a concentrating plant at Questa, N. Mex., and a reduction plant at Washington, Pa., near Pittsburgh. Capacities of both these plants have been doubled this year and production has run considerably ahead of the 1928 rate. The heavier output largely is the result of increased demand from three sources—the use in nitriding of alloy steels, in iron castings and in automotive parts, such as for steering knuckles, connecting rods, propeller shafts and roller bearings. Toncan steel, produced by the Central Alloy Steel Corp., has a certain molybdenum content.

Studies Phase of Melting

The amount of iron oxide dissolved in liquid steel in the open hearth is much higher than has been estimated, according to experiments recently completed at the Pittsburgh division of the bureau of mines. Apparently the carbon-iron oxide reaction is slow enough so that the metal is saturated with iron oxide with respect to the slag under a rather wide range of conditions in the furnace. This fact emphasizes the importance of chemical composition and physical properties of open-hearth slag and the necessity of a careful study of deoxidizers.

License Arrangement Terminates Suit Over Wide Flange Sections

NEW YORK, Nov. 19.—Differences between the Bethlehem Steel Corp. and the United States Steel Corp. over the production and sale of wide flange structural sections have been composed by the latter being licensed under Bethlehem patents. The following formal statement was issued Nov. 14:

> James A. Farrell, president, United States Steel Corp., and E. G. Grace, president, Bethlehem Steel Corp., announced today that the suits recently brought by Bethlehem Steel Co. against United States Steel Corp. and certain of its subsidiaries involving an alleged infringement of patents covering the manufacture and sale of broad flange sections have been settled under an arrangement by which United States Steel Corp. and its subsidiaries have been licensed to manufacture and sell such sections under the Bethlehem patents for the remainder of their terms—from 12 to 16 years. The suits are to be discontinued.

Suit was filed by the Bethlehem corporation against the Steel corporation and two subsidiaries, Carnegie Steel Co. and American Bridge Co., in federal court at Newark, N. J., Dec. 6, 1928, followed by a second early in 1929. The Steel corporation filed several answers and an interrogatory.

The Bethlehem corporation alleged infringement of its patent on the Grey type mill for rolling wide flange structural sections, and asked an injunction and triple damages. Henry Grey, whose patents were the basis of the suits, completed his mill for the Bethlehem corporation in 1908.

On Oct. 26, 1926, the late Judge E. H. Gary, chairman of the Steel corporation, announced the rebuilding of the Homestead structural plant of the Carnegie company for the rolling of a wide flange beam. This prompted a statement by E. G. Grace, president of the Bethlehem corporation, in effect warning against infringement.

On Jan. 1, 1927, the Carnegie company issued a pamphlet announcing its new series of sections. Subsequently, after the matter was in court, the Steel corporation appropriated funds for the construction of a wide flange mill at the South works of the Illinois Steel Co., Chicago.

Machinery

Dealers See Action on Much Inquiry Postponed Until January—More Caution on the Part of Buyers Noted—Crane Market Active

MORE spottiness has appeared in machine tool buying and the feeling exists that a good share of the volume of inquiries now before the market will not be placed before the first of the year. Following curtailment by radio manufacturers in the Chicago district, manufacturers of this type of equipment in the East have announced reductions, one even canceling an order already placed for machine tools. A great many stockrooms are considerably depleted and if only to replace these stocks, machinery buying will be brisk for the next month or two, according to one report. A southern Indiana manufacturer has issued a prospective list of some 25 or 30 tools. Delivery on standard tools in many cases has improved markedly in the past few weeks.

New York, Nov. 19.—While most machine tool builders and dealers report but a slight drop in buying of new equipment, others note a more pronounced lull and the situation generally appears rather spotty. Inquiry continues fairly brisk, but the feeling prevails that considerable of this inquiry will not develop into action until after the first of the year. A fair volume of inquiry brought out at the machine tool show has yet to be placed on order books.

Delivery on standard tools in several instances has improved. Some builders report a slump in lathe buying with delivery on such tools close to normal. Delivery on milling machines and boring machinery continues deferred. Radial drills are strong sellers. Steel fabricating shops have been steady buyers. The radio industry has slowed up considerably in the east, the first report of a cancellation coming from that field. Two shapers on order were held up. Some fair sales are reported from the Philadelphia area by one dealer, including a 42-inch lathe and some heavier equipment. Railroads are doing little, but the opinion holds that several eastern roads will issue lists early in the year, although little evidence appears to substantiate such a view. New York Central is a steady buyer of one or two tools at a time and over the course of a year has purchased a large volume of new equipment.

Grinding machinery is not as active as several weeks ago, reflecting the drop in automobile production. Airplane engine builders also are taking fewer grinding tools. Ball bearing shops are not so active, again reflecting the letdown in automobile output. Export business with grinding machinery builders is good.

Inquiry for overhead crane equipment is fair while considerable business which has been pending for some time has been closed, including cranes for the Harmon shops of the New York Central. Shepard-Niles Crane & Hoist Corp. and Manning, Maxwell & Moore Inc., will furnish this equipment, the latter for the electric shop. The Centre Foundry & Machine Co., Wheeling, W. Va., is inquiring for a 20-ton four motor electric traveling crane with a five-ton auxiliary. Following some activity on the part of two railroads, the locomotive crane market is not active.

Worcester, Mass., Nov. 19.—Machine tool demand has fallen off somewhat, but industrial output continues on a high level nevertheless. The seasonal decline in automotive equipment has affected the market somewhat but it is believed that machine tool production soon will resume larger proportions. Most stockrooms are well depleted and with the delivery situation as poor as it is production must continue at a high rate if stocks are to be replaced.

Pittsburgh, Nov. 19.—Machine tool sales still are in fair volume but general activity in the market has declined further during the past week. Although no reports are heard of canceled orders as a result of stock market disturbances, one or two projects that had come up for bids have been deferred. Inquiry also is less active although there remains a fair volume of pending business. Westinghouse Electric & Mfg. Co. has a number of tools yet to be placed on its fourth quarter list and several other lists remain open. Crane awards are more active although new inquiry is light.

Chicago, Nov. 19.—While inquiry for machine tools in this market continues moderately active, more caution is noted among prospective buyers, particularly smaller manufacturers. Several houses report this month's volume measuring well with October. A southern Indiana manufacturer has a list of 25 or 30 tools before the trade, and scattered inquiries are numerous. A few of the jobbing machine shops, which have been engaged in outside work for several of the radio manufacturers in this territory, have had their programs adversely affected by the curtailment of radio production recently. Most machine tool builders have backlogs sufficient to tide them well over the turn of the year.

Cleveland, Nov. 19.—Machine tool business is marking time with few orders being placed and little inquiry forthcoming. Deliveries can be made without much delay on most standard lines, only new and special types of machines requiring some wait. Automotive plants continue inactive and many other plants are not buying due to drawing up budgets for 1930. New machinery will be included on these budgets probably and therefore will not be awarded until January or February. It is thought that the slack condition is not due directly to the stock market disturbance but rather to a combination of a seasonal condition and overproduction in the automotive industry.

Crane Shipments Higher

New York, Nov. 19.—Shipments and new orders increased in October, according to the Electric Overhead Crane institute. Dollar value of unfilled business, however, shows a slight decline as compared with the previous month.

Shipments included 152 units with a tonnage capacity of 1755½ valued at $1,322,118.30. This compares with 141 units in September with a tonnage capacity of 1595½ valued at $1,048,-054.10.

New orders increased sharply, the volume for the month reaching 134 against 89 in September. October tonnage capacity was 1820 compared with 1025¾ the previous month. The value was $1,142,216 compared with $700,-972.50.

Unfilled orders are lower. On Nov. 1 unfilled business totaled 416 units with a tonnage capacity of 7009 valued at $4,699,019.18. On Oct. 1 unfilled orders were 432 with a tonnage capacity of 6929 with a value of $4,878,873.98.

Weirton Is Expanding

Weirton, W. Va., Nov. 19.—In furtherance of its expansion program, the Weirton Steel Co. already has enlarged one of its blast furnace stacks and is now increasing the capacity of another stack from about 700 tons to 1100 tons daily.

The company at this time also is proceeding with the preliminary work on erection of another battery of by-product coke ovens, actual construction of which will start shortly. The company also will erect a continuous mill, which will manufacture a diversified line of products, including structural steel and railroad supplies.

Hoist Sales Increase

New York, Nov. 19.—Sales of electric hoists increased in October. According to the Electric Hoist Manufacturers association, orders placed with members that month increased 8.983 per cent as compared with September. The value of such orders was 0.3595 per cent greater than in the previous month.

Shipments were 17.1348 per cent lower in October than in September.

CONSTRUCTION and ENTERPRISE

Concise Timely Business Building Opportunities from Field of Industry

East Central

CHICAGO—Norton Co., 11 North Jefferson street, manufacturer of grinding equipment and abrasive materials, awarded a contract for a 2-story plant addition, 160 x 285 feet, to Ford & Phillips, 559 West Van Buren street. (Noted Sept. 19.)

CHICAGO—Faith Mfg. Co., 2533 North Ashland avenue, die caster and manufacturer of auto accessories, will soon complete a 2-story plant building on recently purchased property on Crawford avenue. The company has also leased adjoining property of about 46,000 square feet with option to purchase.

GENEVA, ILL.—Smith & Richardson Mfg. Co., manufacturer and jobber of chaplets and foundry specialities, has construction underway of a plant addition, 40 x 48 feet.

SPRINGFIELD, ILL.—Allis-Chalmers Tractor Mfg. Co., West Allis, Wis., is finishing plans and will take bids about Nov. 18 for a 1-story addition to its plant here. Estimated cost about $150,000.

ELKHART, IND.—R. Keller, care W. W. Schneider, architect, South Bend, Ind., awarded a contract for the construction of a machine shop and garage here, 45 x 65 feet.

HAMMOND, IND.—Hoess Bros., Summer boulevard, has construction underway of a machine shop addition, 40 x 80 feet.

INDIANAPOLIS—City, care P. Moore, superintendent municipal airport, 207 City hall, is taking bids for hangars and an administration building to cost about $150,000. McGuire & Shook, 941 North Meridian street, are architects.

KOKOMO, IND.—Haynes Stellite Co., manufacturer of alloys, tools, etc., has awarded several contracts in connection with its new plant addition. (Noted Sept. 19.)

TERRE HAUTE, IND.—Quick Welding & Machine Co., South Second street, has awarded a contract for a plant addition. Orville C. Coppage is vice president.

ALMA, MICH.—Osgood & Osgood, architects, 2 Monroe street northeast, Grand Rapids, Mich., are preparing plans for a Masonic home. A power house and a garage are included in the plans.

BAY CITY, MICH.—Chevrolet Motor Co. has purchased property for expansion purposes which will practically double the capacity of the Bay City plant, according to announcement by S. A. Woodmancy, superintendent.

DETROIT—Gray Hub Co., 3171 Bellevue avenue, has awarded a contract for a plant and office building to C. W. Figel, 1390 Bedford road. (Noted Oct. 17.)

DETROIT—Northern Conveyor & Mfg. Co., 13835 Jennings avenue, has awarded the general contract for the construction of a warehouse building to Orr Bros., 18970 Grand River avenue.

DETROIT—O. L. Anderson Co. Inc., 1347 East Fort street, manufacturer of auto sheet metal parts, plans construction of a 1-story plant and office building at Westwood and Davison streets.

DETROIT—Allied Die Cast Co. of America, 7420 Melville avenue, recently incorporated, advises through C. M. Sorenson that it is leasing space for the present and purchasing equipment, but plans to build soon as possible (Noted Nov. 14.)

DETROIT—Kelsey-Hayes Wheel Corp. advises it recently purchased property separating the press plant from the wheel unit at 3600 Military avenue and is now making preparations to build an addition on the former property. (Noted Nov. 14.)

MUSKEGON, MICH.—A contract for a new plant building which will contain about 37,000 square feet of floor space has been awarded to the Strom Construction Co., Muskegon. Upon completion the Clarke Sanding Machine Co., 3815 Cortland avenue, Chicago, which is moving here, will occupy the building.

SAGINAW, MICH.—Lufkin Rule Co., Hess street, is having plans prepared for the construction of a 1-story plant addition to cost about $20,000.

AKRON, O.—Burns Motor Co., 68 West Exchange street, is having J. L. Wardner, architect, Everett building, draw plans for a 1-story sales and service building.

BEREA, O.—Ohio Nut & Bolt Co., 600 Front street, has plans for the construction of a 1-story plant addition, 44 x 161 feet. John W. Bagley, 1706 Euclid avenue, Cleveland, is architect.

CINCINNATI—Lunkenheimer Co., Lawnway and Waverly avenues, manufacturer of engineering specialties, awarded a contract for a 1-story plant and storage building to the Ferro Concrete Construction Co., Third and Elm streets.

CINCINNATI—William Powell Co., 2525 Spring Grove avenue, manufacturer of brass and iron specialties, is having plans prepared for the construction of a 2-story plant addition. Estimated cost about $50,000.

CLEVELAND—Acorn Refining Co., 8101 Franklin avenue, awarded a contract for a 2-story warehouse, 105 x 158 feet, to Marvin B. Parker Inc. Estimated cost about $75,000.

CLEVELAND—Packard Motor Co., East Ninety-third street and Carnegie avenue, awarded a contract for a 1-story sales and service building, 139 x 145 feet, at 11636 Lake avenue to Charles Peterson Construction Co., 4500 Euclid avenue.

CLEVELAND—R. J. Schmunk Co., 3746 Prospect avenue, will soon take bids through Dercum & Beer, architects, 4500 Euclid avenue, for a 1-story sales and service building to contain about 18,000 square feet of floor space at 14115 St. Clair avenue.

CLEVELAND—J. C. Virden Co., 6103 Longfellow avenue, manufacturer of lighting fixtures and parts, awarded a contract for the construction of a 2-story plant addition to the Griffin Construction Co., Engineers Bank building. Work will probably start after Dec. 1.

CLEVELAND—Western Reserve university, 10904 Euclid avenue, awarded a contract for the construction of a coal and ash handling plant, including handling equipment, to the Masters & Mullen Construction Co., 4900 Euclid avenue.

DAYTON, O.—Combustioneer Inc., 1829 South Fifty-fifth avenue, Cicero, Ill., manufacturer of automatic coal furnaces, plans building a plant here to cost about $250,000.

DAYTON, O.—Brown & Brockmeyer Co., 10 Norwood avenue, manufacturer of electric motors, contemplates the construction of a 1-story plant addition, the first unit to be 80 x 500 feet. Maturity is indefinite.

ELYRIA, O.—Timms Spring Co. has plans for rebuilding its plant which was recently damaged by an explosion, according to W. B. Timms, president.

SPRINGFIELD, O.—French & Hecht Inc., Wheel and Larch streets, is improving its foundry and installing additional equipment.

TOLEDO, O.—Norman B. Geddes, architect, 127 Thirty-seventh street, New York, has completed plans for a plant to be built on Lasky and Telegraph roads for the Toledo Scale Co., Monroe and Albion streets. (Noted Nov. 7.)

WARREN, O.—Brainard Steel Co. has plans for the construction of two new plant buildings including an administration building estimated to cost about $300,000, according to E. T. Sproull, president. Capacity will be quadrupled.

WOOSTER, O.—City voted favorably on $150,000 bond issue for a proposed water softener plant.

YOUNGSTOWN, O.—Truscon Steel Co. will spend about $300,000 in additions and improvements to its Albert street plant, according to recent announcement by Julius Kahn, president.

ZANESVILLE, O.—Chamber of commerce has taken an option on the Zanesville plant of the Youngstown Sheet & Tube Co. for $150,000, according to Bryce C. Browning, secretary. A new company is expected to be brought here,

said to manufacture steam shovels and occupy the plant.

KENOSHA, WIS.—Wenzel & Henoch Co., Milwaukee, has taken the contract to equip a new boiler house for the Kenosha junior high school, to cost about $65,000 complete.

MANITOWOC, WIS.—Invincible Metal Furniture Co., J. A. Schuette president, contemplates the construction of a 2-story plant addition on Twenty-sixth street.

MILWAUKEE—George H. Smith Steel Casting Co., 500 Clinton street, has purchased a 2-acre tract at Chase street and Holt avenue, upon which it plans to build a 1-story plant addition. Probably not until next spring.

MILWAUKEE—G. E. Wiley, architect of the Milwaukee board of school directors, has been directed to prepare plans for the proposed new 4-story addition, estimated to cost $350,000, to the Girls' Technical and Trade High school on Wells street, from Eighteenth to Nineteenth street. Frank M. Harbach is secretary and business manager of the board.

MILWAUKEE—West Side Mfg. Co., 3100 Walnut street, manufacturing sash, doors and interior trim, has engaged the Klug & Smith Co., consulting engineers, Mack Block, to prepare plans for a 3-story plant addition, 114 x 138 feet, to cost $65,000. Additional machinery will cost approximately the same amount. Edward Schildknecht is president and treasurer.

PRAIRIE DU CHIEN, WIS.—Common council has granted a franchise to the Southwest Wisconsin Gas Co. Inc. for the construction and operation of an artificial gas plant and distributing system. The company plans to use oil rather than coal as fuel base.

WAUKESHA, WIS.—Spring City Foundry Co., 901 West St. Paul avenue, is building a brick and steel shop addition, 55 x 65 feet. Arthur L. Grede is secretary and manager.

WEST ALLIS (Milwaukee), WIS.—Pfeifer Construction Co., 586 Sixty-sixth avenue, is successful bidder for the construction of the third unit of the West Allis vocational school, to be 3-story, 40 x 57 feet, and cost about $50,000. F. E. Haker is president of the board.

TULSA, OKLA.—Walter O'Bannon Co., manufacturer of oil well pumping equipment, is making additions doubling the size of its plant at 400 South Rockford street. New machine shop equipment for finishing of oil field tools will be installed. Walter O'Bannon is president and general manager.

TULSA, OKLA.—Fremont Foundry & Bearing Works, Oklahoma City, is constructing a branch shop at Tulsa for repair and servicing of oil field equipment at Trenton street and Frisco railroad. R. B. Fremont, 1338 West Fifth place, Oklahoma City, is president and general manager.

CORPUS CHRISTI, TEX.—Navigation board plans building of loading docks to serve new sulphur mines at Duval, Tex. Cost is estimated at $300,000.

DALLAS, TEX.—Associated Factories Corp., Marvin building, has undertaken to raise $15,000,000 to finance a dirigible plant here, according to John M. Spellman, vice president and general counsel.

FORT WORTH, TEX.—Southern Electric Corp. plans manufacture of electrical specialties, including special plugs. C. H. Wingrove, 511 South Ballinger street, is president.

West Central States

MUSCATINE, IOWA—City is taking bids, due about Nov. 19, for power plant improvements and additions to cost about $75,000. Burns & McDonnell Engineering Co., Kansas City, Mo., is engineer. (Noted Oct. 24.)

JUNCTION CITY, KANS.—City defeated bond election of $425,000 for a proposed municipal power and light plant. (Noted Oct. 17.)

MINNEAPOLIS—General Electric Co., Schenectady, N. Y., will construct a 4-story warehouse, 80 x 160 feet and a 2-story service shop, 80 x 160 feet at Fifth street and Sixth avenue north. Estimated cost about $500,000.

CONCORDIA, MO.—City is having a preliminary survey made for a proposed light plant and sewage system. W. B. Rollins & Co., Railway Exchange building, Kansas City, Mo., is engineer.

HANNIBAL, MO.—Mid-Continent Petroleum Corp., 320 North Fourth street, St. Louis, is having sketches prepared for an oil storage and distribution plant here.

KANSAS CITY, MO.—Glasco Electric Co. has plans for building a 1-story plant for manufacturing electrical equipment. Victor J. DeFoe, 114 West Tenth street, is architect.

LEBANON, MO.—Central States Power & Light Corp., subsidiary of Central States Utilities Corp., 327 South LaSalle street, Chicago, awarded a contract for the construction of a hydroelectric plant on the Niangua river near here to the Management & Engineering Corp., Dubuque, Iowa.

ST. JOSEPH, MO.—Bird Wing Commercial Aircraft Co., C. Wolfley manager, is finishing plans for a 1-story manufacturing and office building at Rosecrans field here.

ST. LOUIS—Herman Body Co. is erecting a 1-story shop addition to its plant at 4420 Clayton avenue. (Noted Nov. 7.)

ST. LOUIS—Shell Petroleum Corp., St. Louis, is erecting an additional cracking unit of 2000 gallons daily capacity to its oil refinery at Woodriver, Ill.

ST. LOUIS—Carter Carburetor Co., 2838 North Spring avenue, is adding a third floor addition to its plant for manufacture of automotive carburetors. Improvements approximate $100,000 in cost.

Southern States

MORRILLTON, ARK.—City, care Dr. D. T. Black, is having a survey made for a proposed municipal light plant. (Noted Sept. 12.)

SAVANNAH, GA.—Mexican Petroleum Corp. of Georgia, subsidiary of Pan American Petroleum & Transport Co., 120 Broadway, New York, is taking bids on materials for the construction of an oil refinery here estimated to cost about $1,000,000.

HENDERSONVILLE, N. C.—Francis E. Weller Co., Washington, has plans in progress for the construction of a gas plant here estimated to cost about $400,000. Guy H. Bishop and C. E. Edwards Jr., Third avenue, Hendersonville, are associated engineers.

OKLAHOMA CITY, OKLA.—Capitol Steel & Iron Co., Oklahoma City, has construction under way of a $350,000 plant east of Packingtown. A machine shop and compressor room are included in the plans.

Western States

SAN FRANCISCO—Link-Belt, Meese & Gottfried Co., 3100 Nineteenth street, manufacturer and sales agent of power machinery and conveying equipment, awarded a contract for a group of plant buildings to the Austin Co. of California, Russ building.

CRESTED BUTTE, COLO.—Columbine Anthracite Mining Co. contemplates making new surface and underground machinery improvements.

CRESTED BUTTE, COLO.—Colorado Fuel & Iron Co., care fuel department, Pueblo, Colo., has started electrification of its mine here estimated to cost about $200,000.

DENVER—Colorado Fuel & Iron Co., Boston building, has appropriated more than $1,000,000 for the construction of 42 additional by product coke ovens and auxiliary equipment.

GLENDIVE, MONT.—Northern Pacific railroad, St. Paul, has plans for extensions and improvements to its repair shops and yards here. The present car repair shop at Dickinson, Mont., will be moved here and capacity increased.

PORTLAND, OREG.—W. F. Lipman, 355 Everett street, and associates plan construction at Laurel, Mont., of a $1,250,000 oil refinery. Alfred J. Discher, consulting petroleum engineer, will be president of the new company.

BELLINGHAM, WASH.—Clift Motor Co. has started preliminary work on a proposed machine, pattern and welding shop, 50 x 109 feet.

SEATTLE—Grinnell Co. of the Pacific, L. C. Smith building, has purchased a site of 65,000 square feet on which a 2-story fabricating and warehouse building, the first unit, 134 x 300 feet, will be erected.

North Atlantic

BRIDGEPORT, CONN.—Sikorsky Mfg. Corp., manufacturer of airplanes, has construction under way of a one and 2-story engineering and laboratory building, 175 x 235 feet.

SOUTH BOSTON, MASS.—Metal-Craft Screen Mfg. Corp., recently incorporated, advises it has leased a plant and is now purchasing equipment. (Noted Nov. 14.)

SOUTH DARTMOUTH, MASS.—E. H. R. Green awarded a contract for the construction of a 1-story steel hangar, 100 x 175 feet, to the Austin Co., Cleveland. Estimated cost about $200,000.

JERSEY CITY, N. J.—Central Railroad of New Jersey, Jersey City terminal, awarded a contract for the construction of a coal storage plant here to the Nicholson Co. Inc., New York.

ROSELLE, N. J.—Hubeny Bros., 617 First street, metal specialists, are taking bids on general contract for a plant extension.

ALBANY, N. Y.—Albany Steel & Iron Supply Co. recently broke ground for a plant addition which will enable the company to double its capacity.

BUFFALO—J. S. Hausauer, architect, 92 Wallace avenue, is taking bids on the general contract for an automobile sales and service addition for the J. J. Gibson Co., 1196 Main street.

ENDICOTT, N. Y.—C. H. Higgins, architect, 101 Park avenue, will receive bids about Dec. 1 on the general contract for a 4-story plant for the International Business Machine Corp., 50 Broad street, New York. (Noted Nov. 7.)

LONG ISLAND CITY, N. Y.—New York City, department of street cleaning, has plans drawn for the construction of a 1-story storage and repair shop. Estimated cost about $175,000.

NEW YORK—F. L. Smith Machine Co. Inc., 633 West Forty-fourth street, has rejected bids for a proposed plant addition. (Noted Sept. 5.)

PENN YAN, N. Y.—Penn Yan Boat Co., Liberty street, contemplates the construction of a 1-story plant addition estimated to cost about $150,000.

BRADFORD, PA.—Waddington Tractor & Equipment Co. awarded a contract for the construction of a 2-story addition to Simonsen & Lundgren, 106 Elm street.

PHILADELPHIA—Edward G. Budd Mfg. Co., manufacturer of automobile bodies, awarded a contract for a small plant building to T. Wark Co., 1608 Walnut street.

PHILADELPHIA — International Harvester Co. of America, 2905 North Sixteenth street, awarded general contract for alterations and additions at 5235-41 Whitby avenue to the Franklin M. Harris Co.

PITTSBURGH—K. Simon, 160 Fullerton street, has plans for the construction of a 2-story wagon shop addition estimated to cost about $35,000.

PITTSBURGH—Westinghouse Electric & Mfg. Co. is having plans prepared for the construction of an 11-story central engineering laboratory. B. H. Prack, Martin building, is architect.

Canada

BRIDGEBURG, ONT.—Houdaille Co., Buffalo, manufacturer of shock absorbers, will soon start construction of a branch plant here.

OJIBWAY, ONT.—Canadian Steel Corp., subsidiary of United States Steel Corp., 71 Broadway, New York, is contemplating building a tin plate mill here at a cost of about $1,000,000, according to Ward B. Perley, president.

ST. CATHARINES, ONT.—A number of additional contracts have been awarded in connection with $200,000 addition to the plant of McKinnon Industries Ltd., Ontario street. Construction work now is underway.

ST. CATHERINES, ONT.—The foundry of Cunningham & Son's general jobbing and manufacturing plant on Berryman avenue was recently damaged by fire. Estimated loss about $10,000.

TORONTO, ONT.—Plans have been prepared and bids will be called at an early date for the erection of a $70,000 addition to the plant of the Hoyt Metal Co., 721 Eastern avenue. The company's engineer will be in charge of work.

WATERLOO, ONT.—Waterloo Mfg. Co., manufacturer of threshing machines and farm implements, has plans for the construction of a plant addition on Union street estimated to cost about $250,000. (Noted Oct. 31.)

LONGUEUIL, QUE.—A number of contracts have been awarded in connection with the aeroplane manufacturing plant to cost $300,000 for the Fairchild Aircraft Ltd., 1253 McGill College avenue, Montreal, Que. St. George & Gauvreau Ltd., 4820 Fourth avenue, Rosmount, have the general contract, and the Dominion Bridge Co. the steel contract.

MONTREAL, QUE.—Towagmac Exploration Co., 620 Cathcart street, has plans for a proposed refining mill estimated to cost about $500,000.

Recent Incorporations

CHICAGO—Industrial Erectors Inc., 1118 West Thirty-fifth street, has been incorporated with 100 shares of no par stock to engage in general contracting, engineering and erecting business.

CHICAGO—Chicago Shutter Device Inc., 700 West Jackson boulevard, has been incorporated with $10,000 capital to manufacture and deal in automobile and mechanical devices of all kinds, by M. A. Werker.

CHICAGO—Chicago Safety Burner Co., 8532 Vincennes avenue, has been incorporated with $50,000 capital to manufacture and sell oil burners, by A. W. French.

CHICAGO—Industrial Equipment Co., 1428 Halsted street, has been incorporated with $10,000 capital to manufacture and deal in equipment and machinery, by L. E. Cohn.

CHICAGO—Roto Corp. has been incorporated with 4000 shares of no par stock to manufacture and sell restaurant equipment and supplies, by Thomas M. Reade. Golan & Hall, 11 South LaSalle street, are attorneys for the company.

CHICAGO—Weiss Products Co., 4144 Paulina street, has been incorporated with $50,000 preferred and 15,000 shares of no par common stock to manufacture and sell machinery and other devices, by George Weiss.

CHICAGO—August Hanke & Sons, 6326 Cuyler avenue, has been incorporated with $40,000 capital to manufacture and deal in toys, tools, dies, hardware specialties, novelties etc,. by August J. Hanke.

BOSTON—Savage Boat Co. Ltd. has been incorporated with $100,000 capital to manufacture boats, marine engines and accessories. Ralph C. Piper, Concord, Mass., is president.

BROCKTON, MASS.—Geo. Knight & Co. Inc., 54 Lincoln street, has been incorporated with $30,000 capital to manufacture shoe machinery, parts, dies, etc. George R. Knight, 141 Moraine street is president.

NEWTON MASS.—Foresman Electric Contracting Co. has been incorporated with $10,000 capital to manufacture machinery and equipment for steam heating, lighting and signal systems. Fred A. Foresman, Needham, Mass., is treasurer.

DETROIT—New Era Case & Mfg. Co., 955 East Vernon highway, has been incorporated with 5000 shares of no par stock to manufacture and deal in display show cases, counters and store fixtures, by I. W. Watson.

DETROIT—Stannus Propeller Corp., 3401 Illi-

nois street, has been incorporated with $22,000 capital to operate a general machine shop, foundry and manufacturing business, by William Stannus.

MT. PLEASANT, MICH.—Peninsular Producing & Refining Co. has been incorporated with 1000 shares of no par stock to drill and refine oil, natural gas, etc., by Virgil W. McClintic, Mt. Pleasant.

CAMDEN, N. J.—Walters Inc. has been incorporated with 1000 shares of common stock to manufacture automobile bodies, by Lewis Liberman, 307 Market street.

ORANGE, N. J.—Central Construction Co. has been incorporated with $125,000 capital to engage in the contracting business, by Anthony Intiso, 424 Sheridan avenue, Orange.

PATERSON, N. J.—Jones Throwing Machinery Inc. has been incorporated with $125,000 capital to manufacture and deal in machinery, through Roemer & Cole, attorneys, 45 Church street, Paterson.

BROOKLYN, N. Y.—Manufacturer's Welding Co. has been incorporated with $20,000 capital, by E. C. Marsh, 1008 Gates avenue.

BROOKLYN, N. Y.—Biltrite Lighting Fixture Mfg. Corp. has been incorporated with $10,000 capital, by Rubington & Coleman, 32 Court street, Brooklyn.

NEW YORK—Precision Mfg. Corp. has been incorporated with 200 shares of common stock, by W. C. Allen, 342 Madison avenue.

ROCHESTER, N. Y.—Tiffany Machine Works has been incorporated with 100 shares of common stock, by E. C. Redfern, attorney, Union Trust building.

CANTON, O.—Hahn Foundry Co. has been incorporated with 300 shares of no par stock, through Melchior & Roach, attorneys, 804 Renkert building.

FREMONT, O.—Michles Iron & Metal Inc. has been incorporated with $10,000 capital, by I. G. Stout, Fremont.

LANCASTER, PA.—Andes Inc. has been incorporated with $50,000 capital to manufacture and deal in castings, tools and metal specialties. William D. Andes, Lancaster, is treasurer.

LANCASTER, PA.—Hubley Mfg. Co. has been incorporated with $5000 capital to manufacture and deal in metal toys, castings and metal products. Joseph T. Breneman, R. D. No. 6, Lancaster, is treasurer.

LANCASTER, PA.—Multivane Blower & Electric Corp. has been incorporated with $10,000 capital to manufacture and sell heat regulating devices and electric and mechanical devices. Charles J. Scheimer, 232 North Charlotte street, is treasurer.

PHILADELPHIA—Eastern Metals Corp. has been incorporated with $5000 to manufacture and deal in tools, metals and machinery. Robert W. Archbald Jr., Girard building, is treasurer.

PITTSBURGH—Keystone Metal Specialties Co. has been incorporated with $4000 capital to manufacture and deal in sheet metal specialties. James K. Ruby, 1306 Park avenue, McKeesport, Pa., is treasurer.

PITTSBURGH—Jones Flexible Conveyor Co. has been incorporated with 2000 shares of no par stock to manufacture and deal in machinery, devices and appliances. George C. Nelms, 6349 Douglas street, is treasurer.

WILKINSBURG, PA.—Wesco Engineering & Sales Co. has been incorporated with $10,000 capital to manufacture and deal in all kinds of electrical equipment. G. A. Heyl, 4305 Bigelow boulevard, is treasurer.

New Trade Publications

FORGINGS—National Machinery Co., Tiffin, O., presents in a current bulletin illustrations of its high duty forging machine equipped for production of a differential side gear.

ARC WELDING—Lincoln Electric Co., Cleveland, in the current issue of its series on studies in structural arc welding, presents comparisons between riveted and arc welded plate girders. Drawings and data are included.

CONVEYOR FURNACE — General Electric Co., Schenectady, N. Y., has issued a bulletin on a type of conveyor furnace, with mesh belt. Drawings show cross sections and tables of specifications are presented.

GRAPHIC INSTRUMENTS—Continuous inspection by means of graphic instruments is illustrated in a bulletin by the Esterline-Angus Co., Indianapolis. Several applications in different industries are illustrated.

POWER PLANT EQUIPMENT—Chain Belt Co., Milwaukee, has issued a folder covering its equipment for the power plant and central station field. Illustrations show some applications of its equipment in various industries.

STEEL CASTINGS—Lebanon Steel Foundry, Lebanon, Pa., suggests in a current bulletin the use of its electric steel castings for rugged use, such as in trucks designed for heavy duty.

STEEL CASTINGS—Nugent Steel Castings Co., Chicago, devotes a current bulletin to a description of how a tractor builder solved a problem by use of steel castings for spade lugs on his tractors.

ALLOY STEELS—A handbook of special alloy tool steels has been published by Edgar Allen & Co. Ltd., Sheffield, Eng. It describes a large range of steels for various purposes with illustrations of forms in which each is used.

DIE CASTINGS—New Jersey Zinc Co., New York, devotes a bulletin to description of die castings made with zinc base metal, using its brand of zinc. Illustrations show complex castings successfully made with this material.

GAS FUEL—Steam & Combustion Co., Chicago, is distributing a reprint of an article by a user of gas as fuel for producing process steam. It also is sending out a leaflet describing its automatic gas fired high pressure boilers for such purposes.

SHEET METAL EQUIPMENT—Niagara Machine & Tool Works, Buffalo, has published a booklet on the application of its sheet metal working tools and equipment applied especially to the manufacture of aircraft. It is illustrated.

TRAMRAIL—Use of tramrails in the automotive industry for conveying materials and parts forms the subject of a bulletin by the Cleveland Electric Tramrail division of the Cleveland Crane & Engineering Co., Wickliffe, O.

FOUNDRY OVENS—Despatch Oven Co., Minneapolis, has issued two bulletins featuring core and mold ovens for foundry use. They may be equipped with electric, gas or oil heating systems and automatic control is optional. They are illustrated and give full description of operation.

LIFTS AND STACKERS—Lifting, stacking and storing material with its devices is covered in a broadside by the Lewis-Shepard Co., Boston. It illustrates the various elevators and stackers, presents engineering features, shows action pictures of the equipment in use.

TOOLS AND HOLDERS—Gairing Tool Co., Detroit, has issued a new catalog of its standard and special cutting tools and tool holders. Its prices have been revised to comport more closely with the value of the tool rather than by arbitrary increases for various sizes. It is largely illustrated.

WELDED FABRIC—Truscon Steel Co., Youngstown, O., has issued a bulletin on its 4-inch welded steel fabric for reinforcing of concrete roads and similar purposes. Tables show standard sizes, allowable load capacities and tables for estimating weight per hundred square feet of fabric.

CUPOLAS—Whiting Corp., Harvey, Ill., is circulating a reprint of a paper by Dr. Edward E. Marbaker, director of foundry research of the company, on an analysis of performances of 54-inch cupolas, based on records of practical operation. The paper contains tables and graphs presenting results of the writer's research.

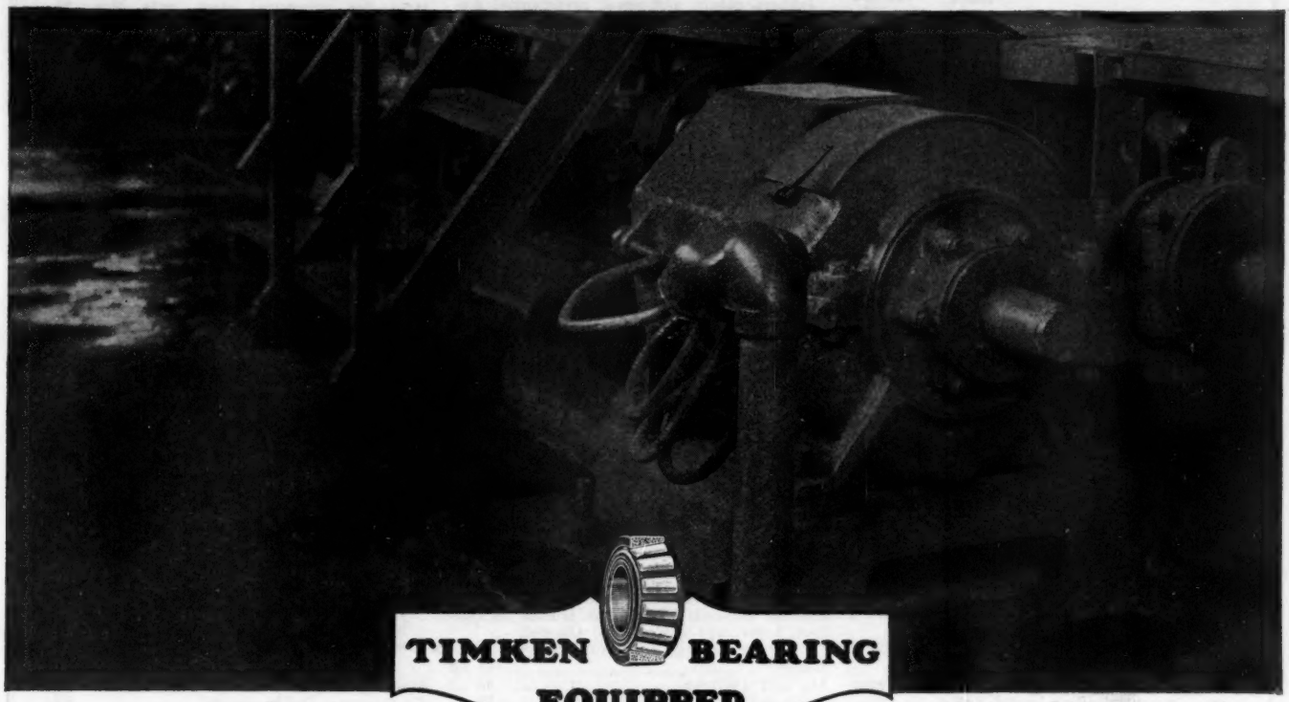
ENAMELING FURNACES — Three pamphlets setting forth advantages of its continuous porcelain enameling furnaces have been published by the Ferro Enamel Supply Co., Cleveland. They contain illustrations and data pertaining to installations. They are titled "Burning Facts," "Where One Outweighs Ten," and "Saving $80 a Day."

COMMUTATORS—Ideal Commutator Dresser Co., Sycamore, Ill., has issued a booklet which really is a commutator maintenance encyclopedia. It has a chapter on operation of D. C. generators, definitions of electrical terms, tables on carrying capacity of solid and stranded wires, tables of fusing, wiring and full load data and other features. It is illustrated.

INDUSTRIAL AIR HEATERS — Gehnrich Oven Co., Long Island City, N. Y., has issued a bulletin on its indirect gas-fired industrial air heaters for air drying paints and varnishes and drying various materials, space heating and processes requiring temperatures up to 250 degrees Fahr. It is illustrated and the text presents applications, construction and operation.

PUMPS—Bulletins on three types of its pumps have been issued by the Economy Pumping Machinery Co., Chicago. One covers its horizontal and vertical nonclogging centrifugal pump. A second its small multistage centrifugal pump and the third its nonclogging sump pumps. They are illustrated in detail to show construction and operation. Tables of specifications and data are given, with drawings.

ENDURANCE



HEAT, dirt, abuse, neglect—the mill motor must stand them all. Whether its duty be continuous or intermittent, it must be able to do its work when called on—without boggling.

Mill motors equipped with Timken Bearings are *always* ready to go. No amount of standing idle in cold or heat, of plugging loaded, or of haphazard lubrication can cripple them.

Timken tapered construction, Timken *POSITIVELY ALIGNED ROLLS* and Timken steel combine to complete the bulwark of mechanical and electrical protection that assures continuous service—and keeps the motors off the books.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

Pipe and Tube Prices—Plate Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

To large jobbers these discounts are increased by 1 point and supplementary discounts of 5 and 2½ per cent on black, and 1½ points and supplementary discounts of 5 and 2½ per cent on galvanized.

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

Butt Weld

	Black.	Galv.
¼ and ⅜-inch	+11	+36
½-inch	23	5
¾-inch	28	11
1 and 1¼-inch	31	15
1½ and 2-inch	35	18

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	9
2½ to 3½-inch	28	12
4 to 6-inch	30	17
7 and 8-inch	29	16
9 to 12-inch	26	11

REAMED AND DRIFTED

2-inch to 6-inch—Two points less than above

EXTRA STRONG, PLAIN ENDS

¼ and ⅜-inch	+13	+48
½-inch	23	7
¾-inch	28	12
1 to 2-inch	34	18

Lap Weld

2-inch	29	13
2½ to 4-inch	34	20
4½ to 6-inch	33	19
7 and 8-inch	31	17
9 to 12-inch	21	8

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

Jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized wrought iron pipe.

On extra or double extra strong pipe fitted with threads and couplings basing discount lowered 5 points from plain end price. Fitted with threads only, basing discount lowered 3 points for random lengths.

Boiler Tubes

Pittsburgh carload discounts

STEEL (Lap Weld)

2 and 2¼-inch	38 off
2½ and 2¾-inch	46 off
3-inch	52 off
3¼ to 3¾-inch	54 off
4-inch	57 off
4½ to 6-inch	46 off

Subject to two 5 per cent discounts on full carload shipments. On less than 10,000 pounds, base discount reduced 6 points and one 5 per cent allowed. Over 10,000 pounds to carload, base discount reduced 4 points and two 5 per cents allowed.

CHARCOAL IRON

1½-inch	1 off
1¾-inch	8 off
2 and 2¼-inch	13 off
2½ and 2¾-inch	16 off
3-inch	17 off
3¼ to 3½-inch	18 off
4-inch	20 off
4½-inch	21 off

Subject to 10 per cent discount on full carload lots. On less than 10,000 pounds, base discount reduced 2 points and no preferential allowed. On 10,000 pounds to carload, 5 per cent preferential allowed.

SEAMLESS COLD DRAWN

1-inch	61 off
1¼ and 1½-inch	53 off
1¾-inch	37 off
2 and 2¼-inch	32 off
2½ and 2¾-inch	40 off
3-inch	46 off
3¼ and 3½-inch	48 off
4-inch	51 off
4½, 5 and 6-inch	40 off

SEAMLESS HOT ROLLED

1¾-inch	37 off
2 and 2¼-inch	38 off
2½ and 2¾-inch	46 off
3-inch	52 off
3¼ and 3½-inch	54 off
4-inch	57 off
4½, 5 and 6-inch	46 off

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed.

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1928

Carbon 0.10 to 0.30 per cent.....50 to 55 off

Carbon 0.30 to 0.40 per cent.....45 to 50 off

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Gage	Net prices per foot f.o.b. Pittsburgh Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅝-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for lengths over 24 feet.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, date Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weight.

Over 100 to and including 110 inches	.05c
Over 110 to and including 115 inches	.10c
Over 115 to and including 120 inches	.15c
Over 120 to and including 125 inches	.25c
Over 125 to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 to and including 84 inches	.10c
Over 84 to and including 96 inches	.20c
Over 96 to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates Not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including ⅜-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds square foot	.20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including ⅜-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds square foot	.20c
Plates ordered 7.65 pounds square foot	.30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull materials subject to U. S. Navy Dept. specifications for medium or soft steel	.10c
High tensile hull steel subject to U. S. navy department or equivalent specifications	1.00c
Boiler steel subject to U. S. navy department specifications, classes A-B	1.50c
Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.	

Floor Plates

Checkered plates	1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection	No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet	No extra
Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (Including straight taper plates)

Additional extra	.10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with reentrant angles)

Additional extra	.20c